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2d Session

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STUDY ON FEDERAL REGULATION

PREPARED PURSUANT TO

S. RES. 71

TO AUTHORIZE A STUDY OF THE PURPOSE AND CURRENT EFFECTIVENESS OF CERTAIN FEDERAL AGENCIES

COMMITTEE ON GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

VOLUME VI

FRAMEWORK FOR REGULATION

DECEMBER 1978

Printed for the use of the Committee on Governmental Affairs

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LETTER OF TRANSMITTAL FOR VOLUME VI

U.S. SENATE,
COMMITTEE ON GOVERNMENTAL AFFAIRS
Washington, D.C., December 1978.

Hon. WALTER F. MONDALE,
President of the Senate,
U.S. Capitol, Washington, D.C.

DEAR MR. PRESIDENT: Pursuant to Senate Resolution 71, the Senate has assigned the Governmental Affairs Committee the responsibility of conducting a study on various aspects of the Federal regulatory process. For over 2 years, our committee has devoted substantial time to this endeavor. We are pleased and grateful to have had the active participation and support of the Committee on Commerce, Science and Transportation in our efforts.

It is a privilege to submit to you the sixth and final volume of our study on Federal regulation. The enclosed report concerns the economic framework for Federal regulation. Published separately from this volume is the Appendix which contains ten case studies on Federal regulation in major areas of the economy. The contents of those studies are the sole responsibility of the authors, and have not been subject to committee approval.

The committee voted 14–0 to approve Volume VI. In the committee's opinion, the report's analysis and recommendations merit the attention and serious consideration of the Senate. It is understood, of course, that Members will have an opportunity for further review of the detail of these proposals as they move through the legislative process.

Dr. Michael W. Klass and Dr. Leonard W. Weiss were responsible for preparation of this volume. Committee staff counsel James M. Graham gave substantial assistance in preparing the volume for publication. Helpful contributions were made by members of the study's advisory panel, who gave generously of their time and provided many important insights.

We hope that the enclosed report will make a significant contribution to a better understanding of the problems of Federal regulation, and will provide a basis for congressional action on these important matters in the 96th Congress.

Sincerely,

ABE RIBICOFF.

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OVERVIEW

This volume considers the economic foundations for Federal regulation. Here we focus on the economic substance of regulation; personnel, procedural and organizational matters have been addressed in other volumes of the committee's Study on Federal Regulation.[1] This volume describes the various purposes, and the advantages and disadvantages, of specific kinds of regulation. It suggests that alternative kinds of regulation, or no regulation at all, might be better in some cases.

Heightened public concern about the impact of regulation will bring increased demands for congressional action to reform regulation. Some will advocate extension and tightening of regulations; others are likely to demand relaxation and greater reliance on "market forces." Effective response to these challenges requires clear congressional and public understanding of the merits and failings of private market operation, the relative efficiency of present and alternative regulatory mechanisms, and problems of transition to new regulatory regimes. This report addresses those vital needs.

In general, the report finds that much of Federal regulation is justified. In certain areas, particularly the economic regulatory area, we conclude that certain modifications would be desirable. Such modifications may be indicated by changes in the economic environment, by experience gained under a specific regulatory scheme, or by an absence of valid reasons for regulation at its inception. In the areas of health, safety, and environmental regulation, though, strong justification exists for continued regulation; however, certain improvements in the effectiveness of some of the regulations may be achieved—chiefly by adopting in some cases alternative methods of Federal intervention to those commonly used today.

The report finds that decisions when and how to regulate all too often are based on insufficient analysis and consideration of alternatives. Simply because a problem exists and, in theory is remediable, does not mean that regulation or other government intervention is desirable. Controls should only be undertaken where there is a clearly identified problem that cannot otherwise be solved, and where the anticipated achievements are significant and not vitiated by projected adverse consequences.

In the context of economic regulation, there is a strong case for private decisions in free markets. When markets are competitive and participants well informed, the firms that sell are generally forced to produce those goods for which consumers are willing to pay, and to do so at minimum cost to buyers. Products and services are offered in a range of varieties and qualities, as determined by consumer tastes and incomes, and by costs of production. Shortages are eliminated automatically either through rationing by price or incentives offered

[1] Vol. 1—The Regulatory Appointments Process; vol. II—Congressional Oversight of Regulatory Agencies; vol. III—Public Participation in Regulatory Agency Proceedings; vol. IV—Delay in Regulatory Process; vol. V—Regulatory Organization.

to expand production of scarce goods and services. The prospect of profits provides a strong inducement to find and exploit new products and techniques. More generally, decisions are made by those directly concerned, and by those with specific knowledge of the situation. The flexibility of the market system and its adaptability to change provides the most general case for private decision in free markets.

However, in certain situations the market economy cannot work satisfactorily, or may fail to achieve, in the words of economists, "efficiency." These "market failures" may arise for a variety of reasons, including monopoly, costly or imperfect producer or consumer information, or the failure of costs to fall on those who produce them. These imbalances may take a number of forms: monopoly can lead to underproduction of particular goods and services; free use of the environment for waste disposal can lead to overuse of the scarce resources; and poor worker information on safety hazards can lead to employment under dangerous conditions. There is then a potential role for government action to correct the imbalance. Regulation is one means of correcting such imbalances, though in many instances it is not the only option or even necessarily the best choice.

A major objective of this volume is to describe the range of problems which Congress has attempted to address by regulation. Traditional regulation has occasionally proven more costly than anticipated. And once established, it has almost always proven to be very difficult to change or eliminate. Therefore, our additional purpose is to describe these consequences of regulation, and suggest alternatives where appropriate.

Many of the rationales discussed below have at least some degree of continuing validity as potential justifications for Federal intervention. As justifications for present regulation, however, some are flawed. In a number of cases, alternatives are available which might promote better achievement of social and economic goals with fewer costs and other adverse consequences. Below we briefly describe the major justifications commonly offered for regulation. It should be noted that many regulatory programs may be based upon more than one of the asserted justifications. We wish to emphasize that this report examines the possible *economic* justifications for a wide variety of regulation, including health and safety regulation.

We believe that before Congress or the agency adopts any proposed regulatory scheme the possible economic justifications for regulation should be scrutinized. The discipline inherent in that procedure is a key element in helping to insure good regulatory decisions. At the same time there may be special circumstances when social, equitable, or other public policy grounds justify regulation which cannot be fully supported by the economic analysis described in this report. Congress or the agency involved, however, should study with particular care the validity of these special justifications when they are advanced.

A. Primary Justifications for Federal Regulation [2]

Natural monopoly conditions

The existence of natural monopoly has been and continues to be a major justification for Federal regulation. Typically in that situation,

[2] For present purposes, the term "regulation" refers to traditional forms of regulation, such as rate, price and entry provisions, standard setting, and licensing. Other kinds of government action, such as antitrust enforcement, subsidies, taxation, and incentives, are referred to as alternatives to regulation.

the regulatory approach involves setting rates, and restricting entry by competitors.

A natural monopoly can exist where economies of scale make it inefficient for more than one firm or very few to operate. Potential competitors are unable to enter the market because of the resulting high barriers to entry. As a result the monopolist may be free to charge higher prices than justified by cost. Local distribution utilities such as electricity, gas, water, telephone and cable television are examples of industries where parallel distribution systems would entail duplication, and presumably higher costs as a result. The main cases of "natural monopoly" which are regulated at the Federal level are oil and gas pipelines, transmission of electricity, and some aspects of long line telephone communications.

Unregulated monopoly power can cause social losses because of restricted output and elevated prices. Monopoly profits will enrich producers at the expense of consumers. Discrimination may be used by monopolists to increase profits and deter competition to correct those problems, regulation permits or even requires monopoly, while controlling prices to avoid excessive profits and undesirable price discrimination.

Natural monopoly, however, is only "natural" in a given technological or economic environment, and with market growth or technical advance, competition may automatically develop. For example, when rail regulation began in 1887 competitive possibilities were very limited in most markets. Natural monopoly in the railroad industry was one of the stated justifications for railroad regulation. While the opportunities for competition in that industry are still limited, railroads face intense competition from trucks on most of the freight they haul. Competition from truckers insures that, on most routes and for most commodities, no monopoly of any significance can exist for the railroads today. As this example shows, yesterday's apparent monopoly can become tomorrow's workable competitive sector.

Our report finds that there are few true natural monopoly situations because market growth and the appearance of substitutes, such as trucking, have offset the tendency of industries toward concentration. But where a natural monopoly actually exists some form of regulation is warranted.

Encouraging proper use of natural resources

Regulation or other controls may be appropriate where private exploitation of natural resources leads to poor conservation practices or where a common resource must be rationally allocated. Where producers draw from a common pool of resources—such as a petroleum reservoir, a radio frequency band, or a fish supply—no one will have sufficient economic incentive to conserve because any output he foregoes will simply be taken by other producers.

Oil and gas industries are a good example of that principle. Under American law, oil or gas belongs to whoever brings it to the surface on his own land. Since the oil or gas in a pool can flow underground, and since the ownership of pools is often fragmented, poor conservation practices result from the race among property owners to get the oil or gas out before the neighbors take it all.

Another commonly owned resource is the electromagnetic spectrum. If everyone were allowed free use and access, chaos would certainly result. Broadcasters using the same frequency would interfere with

one another, and reception of signals would be poor or impossible. Some sort of government intervention is essential if this resource is to be effectively utilized. In general, this rationale for intervention is valid, and the issue is to determine which of the available approaches should be adopted in order to assure proper and efficient use of the scarce resource.

Requiring producers and consumers to take account of external costs

Regulation or other controls can be a means to compel firms or individuals to take account of the costs they cause other people to bear. This rationale serves as a primary reason for regulation of environmental pollution, occupational health and safety, and other areas as well.

For example, a mill that produces smoke and soot imposes costs on its neighbors in the form of polluted air, bad health and unsightly surroundings. Since these costs do not fall primarily on the firm that causes them, the polluter may choose to ignore them in the absence of controls. If they did fall on the firm, the polluter would attempt to minimize the sum of these costs, as well as the costs of prevention like other conventional internal expenses, such as labor and materials. In addition, if these costs fell on the firm they would be reflected in product prices, and consumers would be encouraged to avoid purchasing pollution-related products.

Similarly, because of weak market incentives for voluntary health and safety programs by employers, regulation may be used to force employers to internalize the costs associated with job hazards. Also, very significant external costs exist in the hospital field. At present, due to third party payments, the tax structure and other causes, a large share of hospital costs is not directly sustained by users of those services, and there is an absence of incentives to take account of costs and alternatives in this area.

Thus, compelling businesses and consumers to consider the full economic consequences of their actions is a major justification for regulation.

Inadequate information about health, safety, and other concerns

Correcting inadequacies concerning information is a valid basis in many areas for a government role. This justification underlies much federal health, safety, and consumer protection regulation, including controls on food and drugs by the Food and Drug Administration, airplane safety by the Federal Aviation Administration, tires by the National Highway Traffic Safety Administration, and televisions by the Consumer Product Safety Commission. In each of these areas, regulation is intended in part to address the problem of inadequate information. The problem of imperfect information is also another justification for the regulation of workplace safety.

Perhaps in a perfect market, where individuals are expert, free choice would lead to the production of the "best" goods, those goods upon which consumers put the highest value relative to their cost of production. However, in a real world where consumers and workers are only partially informed, many decisions will be wrong, and some can be disastrous.

The market place may not provide consumers with all of the information they need. So, too, some producers and employers may view it in their interests to provide incomplete or inaccurate informa-

tion. The "free" market just may not provide enough information for the consumer to know which product contains cancer-causing additives, which device may be defective, or what the health hazards are in a particular workplace.

Government should play a role where inadequate information is a problem, and where potential adverse consequences may be significant. In areas where it is relatively inexpensive for consumers to evaluate accurate information, the appropriate approach may be to require accurate labeling, and to prohibit misleading promotional statements. The Food and Drug Administration, for example, requires accurate labeling telling consumers about the fat, protein, carbohydrate and calorie content of certain foods. Notification requirements which mandate the supply of information to agencies, such as in the case of certain SEC disclosures, may also be related to this justification.

The problem of imperfect information, however, is not solved in all cases simply by providing more information. Where it is very costly or difficult for consumers to acquire the sophistication needed to evaluate necessary information, it may be more appropriate to license producers or to establish and enforce standards. This approach is particularly necessary where uninformed decisions can have dangerous consequences. For example, consumers cannot generally be expected to acquire the expertise and resources needed to evaluate various food additives and prescription drugs, especially given the significant possibility of disastrous effects. Moreover, in the case of certain dangerous or highly addictive drugs, banning of that substance may be the solution to protect the public welfare. Nor would it make sense for passengers to inspect the qualifications of the pilots or the safety equipment of the airplanes on which they fly. Consumers just cannot usually determine what radiation level their televisions emit or whether their tires may blow out at high speeds. In these situations a stronger government role, such as that of a standard-setting approach, is called for.

B. Additional Justifications Given for Regulation

The previous discussion focused on those justifications which can support long-term government controls. Other alleged justifications, listed below, are less persuasive. Conceivably these rationales may provide support for short-term regulation or some other form of government action: in most cases, however, they are inadequate bases for long-term regulatory controls.

Preventing destructive competition

One justification sometimes offered is that in the absence of regulation, competition would be "destructive". In other words, without controls, an industry involved or a major part of it might operate at a loss for long periods. This was advanced as a major justification for the regulation of railroads in the late 19th century, and trucking in the 1930's. Serious doubt exists today, however, about the likelihood of destructive competition among railroads or trucking firms.

In all parts of the country, whether or not they face competition among themselves, the railroads compete with trucks. It seems doubtful whether truck-rail competition would be any more in-

tense in the absence of regulation. Moreover, in spite of the highly-competitive organization of most of the trucking industry, it has shown little evidence of "destructive competition".

Overall, the study finds that harmful "destructive" competition is more a fear than a reality. Incidents of that reality have been rare. Possibly during the Depression entry into such fields as trucking might have been excessive. But the full panopoly of present ICC regulation does not seem justified on the basis of that possibility reoccurring. We find that destructive competition appears most unlikely following deregulation of most potentially competitive regulated industries.

Shielding consumers from steeply rising prices

Price controls, as a variety of regulation, have been imposed to protect consumers from higher costs. This form of regulation aims to distribute returns over and above what is necessary to maintain production away from producers. But controls, which keep prices below levels dictated by scarcity and costs, generally cannot yield net economic gains. Consumers may gain at the expense of producers but, overall and in the long run, there will be a net loss as output declines, consumers have little incentive to conserve, and commodities are kept from their most valuable uses.

Because of the potential for severe and self-defeating distortions, controls should not be imposed unless the need for protection is clear and compelling. Even then, controls should be imposed only on a short term basis, because when consumer impacts are substantial, incentives to conserve are correspondingly important. Controls may be combined with appropriate equalization taxes to create the necessary incentives. Notions of equity (for example, denial of windfall profits) and concern over social dislocations may justify short-term government intervention. But because of the danger of creating vested interests and the need for ever more elaborate and extensive systems of controls, regulation and offsetting systems of compensation and subsidy "shielding" of consumers should not be undertaken lightly. And if such controls are adopted they should be made explicitly temporary.

Controlling price discrimination

Much Federal and State regulation has as a stated purpose the prevention of undue discrimination, in the sense of prohibiting different prices for similar services. In fact, price discrimination between long and short hauls and in favor of large shippers was among the complaints that brought about the establishment of the ICC.

In addition, in a monopoly setting, regulation has been justified as a means to control predatory pricing practices. Price discrimination can unduly increase producer profits and impede competition. Discrimination can also put payers of high rates at a competitive disadvantage. Selective or predatory price cutting can be used by dominant firms to destroy competition or deter entry. It can also lead those subject to higher rates to expand resources to gain access to the lower rate levels.

In competitive industries there is little rationale for regulating price at all, much less price differences. Even in many regulated sectors, however, it does not appear that discrimination is or could be a significant problem.

Indeed, regulation may actually impose or foster discriminatory practices by regulated firms. Preventing price differences can have

negative effects, and imposing uniform prices when costs differ is itself discrimination. Disallowing cost-justified rate differences can slow technical progress, as in the transportation industries, where introduction of unit trains, large aluminum-bodied hopper cars, and "piggy-back" service were slowed. Imposing identical prices when costs differ may also cause deterioration in the higher costs service, and may induce wasteful service competition to capture business in the high profit areas.

Predatory discrimination may be more likely in industries where entry is barred or limited, or where firms may have incentives to enter unprofitable markets to increase their rate bases and total profits. When this occurs, a monopoly may exist. For reasons previously discussed, regulation may be justified when natural monopoly conditions exist. But the price discrimination justification ought to be used sparingly.

Promotion of key industries

Regulation has been used to promote industries, including aiding development of civil aviation. Such regulation, by reducing the risk from entry or competition, allows investors in fledgling industries or in otherwise risky enterprises to reap rates of return high enough to justify the investment. This argument parallels the basic justification for the patent system, which is designed to encourage invention and innovation. But, like patents, the rationale clearly applies only to new and risky ventures. Thus, the justification might have been valid, for example, in the early years of civil aviation but surely does not apply today.

Regulation might also shield an industry from lower cost competition, thus increasing its size. An example would be prevention of truck inroads into rail traffic, if railroads were deemed more essential to some national purpose. But in most cases there is a clear conflict between industry promotion and the high prices and restricted output that result from regulation.

Using regulation to "promote" a key industry means that controls may acquire undue sanctity. Subsequent efforts to eliminate or relax regulation will be viewed as endangering some key interest and will surely be resisted by those who are adversely affected.

In short, this volume finds that regulation can have undesirable consequences when used as a promotional device. If it is used to reduce risk or limit subsidy in new industries, experience indicates that controls should be explicitly temporary in nature. Long term promotion by regulation—as of industries considered vital to defense or national security—may be needlessly expensive. Direct subsidy, as limited by contract terms or competitive bidding, appears to be a far more effective method of achieving the desired objective. Unlike indirect subsidies, direct payments are visible and subject to Congressional review during the budgetary process. They are far less intrusive than many other available approaches.

Providing services to certain groups; encouraging cross subsidies

Assuring service to particular groups or communities is a frequent motivation for regulatory controls on rates and entry. Of necessity that often implicitly entails cross-subsidies, transferring income from profitable business activities to less remunerative areas. This results in higher prices for some in order to support otherwise unprofitable

service. A further indirect effect is that entry controls, which impede competition, must be used to protect the profits necessary to finance the cross-subsidized service. A regulatory approach which depends for its success on cross-subsidy is inefficient and unpredictable. That is so because the actual provision of service varies with firms' discretion and market conditions.

Cross-subsidized service to small or rural communities is often used to justify regulatory controls. But the costs of providing air, rail and less-than-truckload motor carrier service to small communities are relatively high. If rates cannot reflect this cost, regulation will induce *worse*, not better service to small communities, compared with unregulated markets.

In short, regulation to provide service to small communities through cross subsidies is inefficient. And in some industries where this justification has been advanced, it is questionable whether significant cross subsidies have actually been provided.

The issue of "service to small communities" is in a sense meaningless. Instead the real issues are "at what price" and "who should pay?" There is no reason to expect a lack of service to small communities, provided that consumers are willing to pay and regulation allows rates to reflect actual cost.

It is possible that some small communities might face dislocation if, for example, rail service were discontinued, or the price of service became unacceptably high. However, the likely availability of truck service means that possible disruption in a particular area would be slight. In the event that some small communities did suffer disruption or unacceptably high prices, adjustment assistance or locally-paid subsidies to maintain service seem to be more appropriate remedies than continued full-scale regulation.

Controlling competing industries

In some cases, regulation has been imposed in one industry because it was in competition with another industry subject to regulation. For example, ICC regulation of trucks was initially undertaken largely because that industry was becoming an increasingly important competitor for the railroads, which were already subject to regulation. The railroads argued vigorously for truck regulation during the late 1920's and early 1930's as the trucks cut increasingly into their freight business.

More recently, the FCC's regulation of broadcasting was extended to cable TV, although cable TV does not in any way present an interference problem, which is the basic justification of broadcast regulation. The Commission's justification for its regulation of cable was that it affected the profitability of already regulated over-the-air broadcasting and might make some local stations unprofitable, thus reducing service to consumers. It should be noted that recent court decision have seriously questioned this justification.

Although regulation of competing industries has been rationalized on the grounds of improving efficiency and protecting those already subject to controls, the study concludes that there are few, if any, cases in which regulation of competing industries actually improves economic performance. The desire to protect an industry that is already regulated does not justify the inefficiencies caused when regulation is extended to the competing industry.

Preservation of established "property rights"

Once established, regulation tends to spawn and then protect certain groups, which subsequently have a vested interest in its continuation. Thus, avoiding allegedly adverse economic consequences to those interests sometimes becomes a powerful argument for continuation of regulatory controls. As a result of regulation, firms or individuals may have acquired "property rights," such as trucking certificates and broadcast licenses. Such property rights associated with regulation are often very valuable. If regulation were eliminated or relaxed some would sustain capital losses, and others might be burdened with high finance charges for assets with lowered value. For example, negotiated brokerage rates required by the SEC drastically lowered the value of seats on the New York Stock Exchange.

Regulation is not always necessary to provide continued protection of secure positions or to guard against losses. In some cases deregulation may benefit the industry as a whole. In other cases, individual regulated firms will gain. Maintaining regulation simply to protect existing interests also means that consumers and others will make continuous payments to these groups, the sum of which will often far exceed the gains to the protected group. Should it be determined that some group is deserving of support, it will generally be cheaper to provide for this through direct subsidy than by continued regulation. More important, such subsidies will be visible in the sense of being subject to the budgetary process.

Yet there may be a responsibility to those who have invested on the basis of expectations as to regulation. The issue is similar to protecting consumers by controlling prices. Temporary aid or protections may be proper, but permanent shielding is likely to impose increasing costs and distortions. In short, preservation of property rights is not a sound basis for continued regulation. Where legitimate expectations as to regulation exist the problem is one of fashioning an appropriate means of transition from the regulatory scheme.

C. Regulatory Alternatives

Deregulation

Although much of Federal regulation is justified, alternatives to particular methods of regulation may be appropriately adopted in certain areas. A major alternative to regulation is no Federal intervention or, in the case of existing controls, deregulation.

In that regard, it should be recognized that there are two major forms of Federal regulation. First, there is economic regulation which is concerned with prices, entry, and rates of return. The major purpose of economic regulation is to insure the smooth functioning of the economy through controls on monopoly, discrimination, unfair business practices, and denials of service. The activities of the Civil Aeronautics Board and the Interstate Commerce Commission are examples of that kind of regulation. A second form of Federal regulation has as its primary concerns a broad range of social objectives, such as health, safety and environmental protection. Examples of agencies involved in that second category include the Environmental Protection Agency, Occupational Safety and Health Administration, and the Consumer Product Safety Commission.

The distinction is significant for questions of deregulation—the elimination of controls. Economic regulation has been often imposed in order to shield a particular industry from the effects of competition and an unfettered market. In that area, elimination of controls allows competitive pressures to operate, sometimes without serious adverse economic effects. However, the lifting of controls in the health, safety and environmental fields typically would not result in similar benefits. For example, the environment has historically been used by the private and public sectors as if it were a free resource, when in fact it is both scarce and exhaustible. Absent some form of regulation, there would be no economic incentive to absorb the costs of abatement and conservation, since the costs of pollution usually fall elsewhere than on the polluter. Thus, a "free" market in environmental resources would not insure clear air and clean water. To the contrary, business and government would as they have in the past use the resource without sufficient concern for the public interest.

On the other hand, it may be possible in certain areas of economic regulation to allow free market operation without adverse effects on the national economy. Recent Federal action to deregulate the airline industry illustrates that proposition.

Civil Aeronautics Board regulation of airlines often meant restrained or lessened competition. For example, between 1950 and 1974, the CAB received 79 new airline carrier applications. None of those applications were approved. Federal regulation shielded the existing airline industry from competition, with the result that airline fares were much higher than necessary. Certainly the consumer did not benefit from CAB regulation. High consumer costs are indicated by the fact that in the intrastate market in California, where no Federal controls exist, carriers were able to provide high quality service at fares as much as 50 percent lower than Federal certified carriers in similar interstate routes. In early 1977, the General Accounting Office estimated that airline deregulation would save between $1.4 to $1.8 billion annually.

We now know that relaxation of Federal controls on airlines has positively benefited both the industry and the consumer. Today the Nation's airline business is in much better financial condition than prior to that action. The pro-competition approach has produced lower fares and varied service, which in turn has attracted more passengers and generated more jobs for the industry. Published reports indicate that every carrier has experienced increased operating revenues, ranging from 10 percent to 30 percent higher for the first 6 months of 1978 as compared to the same period in 1977. Operating profits have similarly increased. Under the "Airline Deregulation Act of 1978," which was recently signed into law by the President, the CAB's powers must in the future be used to foster and encourage, rather than restrict, competition between air carriers. The agency's powers are scheduled to lapse in 1983, and the CAB itself will go out of existence by 1985.

The deregulation approach taken with airlines should be considered for other economic areas. Federal controls on trucking may be such an example. Like airlines, the cost of trucking regulation is very high. It is estimated that those regulatory controls cost the U.S. economy between $1.4 and $2.9 billion annually. Since ICC controls restrict

competition by limiting entry into the field, regulation supports the commercial value of ICC operating certificates, many of which date to the 1930's when controls were first established. Today those certificates are valuable licenses. This regulation, however, does not benefit the consumer, who pays higher rates for interstate trucking than would otherwise exist in the absence of controls. It does not appear that continued Federal regulation of trucking is justified, both in light of present day conditions and in the context of the adverse effects those controls appear to be having on the economy.

Performance vs. specification standards

Where a decision has been made to regulate in order to insure that firms take full account of the consequences of their actions, a variety of regulatory approaches is available. A standards-enforcement approach may be the best choice if there are major information problems, or if potential risks are grave and consequences severe or irreversible; in other words, where either certainty of result or some definite threshold level of achievement is considered essential. Even under that approach, though, it is critically important to appreciate the relative merits of specification and performance standards.

"Performance standards" require that certain goals be achieved, such as emission levels or nutritional qualities, without specifying *how* they are to be achieved. That kind of standard allows firms and individuals to achieve the least-costly method of compliance. For example, a smelting business could decide to install scrubbers in its smokestacks so that it could adhere to the air pollution standards, or it may find another technological device which would allow it to meet the standard. The "performance standards" approach encourages flexibility and technical change, although extensive monitoring may be necessary to insure compliance.

On the other hand, "specification standards" require particular *means* of achievement, such as specific design, equipment, or techniques. Unlike performance standards, monitoring and enforcement may be less burdensome. Yet delineating specific means of achievement necessarily limits the range of technological change and may impose unnecessary costs. Flexibility is also lost, as firms and individuals are given little latitude to choose the least costly method of compliance.

Nevertheless, truly severe risks may suggest the need to actually specify by standards particular technologies, processes, or products. For example, in the nuclear regulatory area, it is not possible to simply require a performance standard—such as that reactors be "safe," in the same way the National Highway Traffic Safety Administration might require certain maximum automobile braking distances under specified conditions. In such a complex area as nuclear safety, the standards must frequently relate to the specifications of the production process: that certain kinds of pumps and grades of steel be used, and so forth.

Standard setting vs. information disclosure

Still another alternative to the standard-setting approach is the increased use of information regulation. For example, rather than banning outright a product which does not meet a particular standard, it may make sense to allow distribution of the product provided that it is accompanied by information disclosing the hazards or problems

associated with its use. This approach is now taken with numerous products, notably cigarettes, thereby allowing consumers who are willing to take certain risks the opportunity to purchase the product. In addition to allowing a greater range of choice, information regulation allows consumers to be aware of the presence of risks which could be avoided by proper knowledge.

Information thus has some of the automatic quality of incentives; in other words, it can naturally prompt a certain response. However, like incentives, the existence of a potentially severe risk or irreversible consequences suggests that information without something more is inadequate. Moreover, if the information is too complex to be understood by most or all of its intended recipients, information regulation alone may not be adequate. Also, if the recipient of the information is different than the ultimate users of a product, information regulation alone may not be enough. Under these circumstances information might be properly supplemented with vigorously enforced standards and suitably designed incentives.

Economic incentives as alternatives to traditional regulation

Economic incentives may be an alternative or a valuable complement to the use of standards. As the risk of severity declines, and the certainty of result is less essential, the desirability of an incentive approach increases. Reduced costs of enforcement and compliance may enhance the desirability of an incentive approach. Thus, fees, delayed compliance penalties, tax concessions, exchangeable rights, and other systems can be effectively utilized. Taxes or other fees can be based on some measure of performance, such as the extent of pollution produced or degree of health hazard.

In many environmental areas, incentive systems can reduce compliance expense by automatically concentrating abatement efforts on those firms with the lowest compliance costs. Such systems can induce firms and individuals to abate their activities up to the point where costs, including any fee, or further action would not be justified by extra fee savings thereby obtained. Thus the fee itself will be treated by a firm just like other costs of operation, such as electricity, labor, and materials. The firms will weigh the fee (which, in effect, is the cost of nonabatement) against the cost of abating the hazard and thus avoiding the fee.

Fee systems have several advantages. One of the main advantages of such financial incentives is that they do not discriminate among alternative methods of compliance. Rather, firms and individuals have built-in economic incentives to take the least costly action indicated by the incentive. Perhaps most important, when fees are imposed it becomes profitable to reduce the hazard. There will also be clear incentives to innovate and pursue the least costly methods of achieving a particular goal. That will involve consideration of various possibilities, without favoring any particular approach. The result will be that those subject to fees will be induced to make this contribution to reducing the hazard at a minimum cost. All of which is automatic and not unnecessarily dependent on administrative discretion and review.

As mentioned previously, in some cases of high risk, only specification of certain technologies may provide sufficient protection. For example, the risks from mercury discharges are so high that economic incentives may not provide enough certainty to insure a safe level of

discharge. Or it may be considered too risky to allow continuation of a particular activity, even though participants are willing to pay high costs and the resulting revenues are used to compensate the losses.

The direct subsidy option

Direct government subsidies are an important alternative to traditional regulation. Such subsidies may be in some cases less intrusive and possibly more effective in achieving regulatory objectives that rate and entry controls. For example, direct subsidies could be used to provide service to certain groups or communities, or to develop industries considered vital to a national interest. While direct subsidies do impose costs, that expense is visible and subject to congressional and public review in the budget process. Moreover, unlike regulation—which can stifle innovation, restrict competition, and encourage indirect or "invisible" subsidies—direct payments need not require an elaborate bureaucratic structure. Costs could be minimized through competitive bidding, and by awarding the subsidies to those who can perform at the least cost. Moreover, in order to moderate demand, those benefiting may under certain circumstances be required to pay part of the costs.

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Of course, this listing of alternatives is partial, and not intended to be exhaustive of the range of options available to government. Also in any given area, there may be numerous possible alternatives for Federal action. For example, at least five different regulatory approaches, or combinations thereof, could be used to address the problems of health hazards in cigarette smoking. Tobacco consumption could be banned altogether (prohibition). Or, government could specify production standards, such as the tobacco content in cigarettes, or the kind of paper to be used (specification standards). Or, standards could be established to insure that cigarettes do not exceed certain tar and nicotine levels (performance standards). Or, government could require health hazard warnings to be displayed on cigarette packages and advertising (information disclosure). Or, taxes or fees could be imposed for the purpose of discouraging cigarette smoking (economic incentives). Several of these options could be used in a combined effort to reduce this hazard. For example, maximum tar and nicotine levels could be set, while continuing the health warning on packages. The choice of a particular option or group of options might depend on such factors as the magnitude of the hazard; its impact on the public at large; the degree of public awareness of the hazard; the elasticity of consumer demand; and the opportunities for technological development or change in the industry.

D. Use of Impact Analysis in Regulatory Decisions

Impact analysis, which evaluates the costs, benefits and alternatives of proposed government actions, should play an important role in regulatory decisionmaking.

It is logical and reasonable to estimate costs, project benefits and consider alternatives before making significant regulatory decisions. In that sense, the impact analysis approach is a useful tool in careful planning and priority setting. In addition, such analysis can make a significant contribution to determining whether the conditions which originally justified government intervention continue to exist. Economic evaluations can help provide some public accounting for the

use of the Nation's resources, as represented by the cost of regulation. Such costs, thought by some to be borne by business, are generally and ultimately paid by the public. Finally, impact analysis should produce useful information on the benefits gained and burdens imposed by regulation.

Any consideration of impact analysis must consider the key distinction between economic regulation which is concerned with prices, entry, and rates of return, and regulation which safeguards the public health and safety and the environment.

Where economic regulation is concerned, impact analysis can be more easily applied, since there the consequences are usually capable of being reduced to dollar and cent terms. Such is not always the case with health, safety and environment regulation. Here it is extremely difficult to quantify benefits since they are subject to great uncertainty and often become apparent only with the passage of time. In addition, some important benefits—such as recreational or aesthetic values—are difficult if not impossible to quantify in any meaningful way. Finally, there is the question of how the value of risks of human life, injury and suffering are computed. At present, there is no generally accepted method for evaluating such losses.

Therefore, there are serious limitations to the use of economic impact analysis in the health and safety area. Certainly the decision on whether to issue a regulation in these areas cannot turn exclusively on an impact analysis finding. Much more is involved, and decisionmaking to protect the public from serious hazards should not be reduced to those terms.

However, despite the difficulty of making such estimations, it is essential to have more information on the costs—and indeed the benefits—of both Federal economic regulation and of Federal health, safety and environmental activities. Also, the means used to achieve statutory goals should be the most efficient and least costly available. Today it is clear that Federal resources in those areas are often committed without proper knowledge of the costs and consequences of those actions.

Up until very recently, appraisal of the economic impact of proposed Federal action was conducted in an informal and casual fashion, if at all. Only since late 1974 have executive branch departments and agencies been required to conduct such appraisals. The requirement is not based on statute but on an Executive Order, which was first issued by former President Ford and subsequently modified and strengthened by President Carter.

A review in 1976 by the staff of the Council on Wage and Price Stability and the Office of Management and Budget indicated a mixed record of accomplishment. Few impact statements were actually prepared, and those by only a small number of agencies; the effect of the program on the quality of regulatory decision-making was at best uncertain; and enforcement efforts had been something less than vigorous.

More needs to be done in this area. A statute is necessary to establish an economic impact analysis requirement for significant Federal regulations. Any statute in this area must take account of the following factors:

First, while agencies should be required to project and consider costs, benefits and alternatives, that analysis must not be considered a final determinant of whether an action should be taken. The difficulty of

quantifying costs and benefits and the appropriateness of applying economic statistical analysis to health and safety areas must be recognized. Also, some benefits as well as costs may be expressed, as part of the impact analysis, in other than dollar terms. Thus, regulatory actions should not be restricted to only those situations in which the projected quantifiable costs do not exceed the projected quantifiable benefits.

Second, care should be taken to avoid a complex and time-consuming economic impact evaluation process. Such a process could add to—rather than reduce—the costs of regulation by injecting additional expense, delays, and confusion into the system. For example, agency actions could be stalled for years in the courts if litigation challenging the adequacy of economic evaluations were permitted.

Third, proper impact analysis requires considerable expertise and judgment. Therefore, any analysis should be conducted within the department or agency which is considering the proposed action. The adequacy and objectivity of such analyses can be insured through congressional oversight and by periodic review and appraisal outside the agency.

Those considerations are reflected in the following proposal to establish an impact analysis requirement by statute. The statutory mechanism should include these provisions:

- *All Federal regulatory agencies should be required to systematically consider the economic impact of significant regulations, including costs, benefits, and alternatives, before final issuance of proposed rules and regulations. This requirement should apply to all rulemaking proceedings which are likely to have a substantial economic impact.*

- *Economic impact analysis should involve a two-step process. When regulations are initially published for public comment, Federal agencies should be required to release a draft impact analysis containing the following information: (a) a succinct statement of the need for, and objectives of, the contemplated action; (b) a description of possible choices to accomplish the stated objectives; and (c) for each of those choices a preliminary statement of the economic consequences, and an appraisal of the effectiveness of each choice in meeting the stated objectives. A reasonable period of time should be allowed for public comment on the draft analysis. When the regulations are issued, Federal agencies should be required to publish a final economic impact analysis, containing the information required in items (a)–(c) above, as well as a summary of the public comments on the draft economic impact analysis.*

- *A waiver of the requirement should be permitted if a written determination is issued and signed by the head of an agency, certifying that the action is taken in response to an emergency situation, or is governed by short-term statutory or judicial deadlines. That certification should be published in the Federal Register, and should not be subject to judicial review.*

- *Procedures and findings in connection with any specific economic impact analysis should not be subject to any judicial review. Judicial review should continue to be available for the agency regulation which is the subject of the analysis.*

Congress should assume responsibility for actively overseeing agency compliance with this statute. A selected number of economic impact statements should be subject to periodic review outside the agencies proposing regulations. In that regard, Congress may wish to utilize its own support agencies, such as the Congressional Budget Office and the General Accounting Office. The findings of such reviews should be reported to the public, Congress and the agencies involved. Also, as we discuss in chapter seven, a revitalized Administrative Conference should provide guidance and monitor agency compliance with this statute. Finally, as we recommended in Volume V of our study, the President should be given a formal opportunity to make on-the-record comments and presentations to the agencies during the rulemaking process.

E. Guidelines for Regulation

In analyzing any long-term [3] regulatory program, two fundamental questions are presented. First, do the economic and social conditions require intervention by the Federal government? Second, if a Federal role is warranted, what is the least intrusive or burdensome means for achieving the desired result?

The following guidelines should be of assistance in determining the first of these issues—the appropriateness of government control or intervention:

- *Will more than one firm offering service result in duplication of facilities and higher costs per unit, such that economies of scale make it inefficient for more than one firm to operate? Is it unlikely that market growth or technological advance will change these conditions, and allow competition to develop?*

- *May a commonly owned resource be wasted through unrestricted exploitation? Is the resource so scarce that only limited numbers of users may utilize it effectively?*

- *Does production of a product or provision of a service impose substantial economic or social costs upon society? Does the ultimate price of the product or service fail to adequately reflect such costs?*

- *Is information about a product or service incomplete? Could the lack of adequate information result in a significant detriment or harm to the user of that product or service?*

To the extent that one or more of the foregoing categories of questions can be answered affirmatively, it may be that a good case can be made for imposing some form of long-term government intervention in the marketplace.

If justification exists for a Federal role the following questions should be considered by Congress—and by the agencies—to determine the best means to accomplish the regulatory goals:

- Prohibition. *Is the inherent risk presented so grave and significant as to require an outright ban on consumption or use?*

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[3] Certain programs—such as those to ameliorate the impact of steeply rising prices or to promote key industries—do not satisfy the guidelines set forth here. These programs may be justified, if at all, only on a short-term basis. These guidelines are addressed to programs of a permanent nature, which are not designed to be phased out following an interim period of controls.

- Specification Standards. *Are potential risks so grave and consequences so severe or irreversible as to require specification standard setting? Is either certainty of result or a definite threshold level of achievement considered essential in a given area? How great will be the effects of such standards on costs and technology?*

- Performance Standards. *Are the consequences less severe and certainty of result less crucial, so that performance standards may be used instead of specification standards enforcement? Does either technological complexity or the diversity of production processes make specification standards impracticable?*

- Information Disclosure. *Will provision or disclosure of information to consumers provide an adequate safeguard, so that a standards enforcement approach need not be used? How costly or difficult is it for consumers to acquire the sophistication or knowledge necessary to evaluate the necessary information? How dangerous are uninformed decisions? Will the information be provided to all persons who may be affected by the product or service? Will it be understood and used by such individuals?*

- Economic Incentives. *Are the risks and the consequences of unregulated action less severe than in other cases requiring more stringent measures? Are higher levels of government-imposed costs likely to create the desired incentive? Are the means of compliance diverse, so that flexibility which economic incentives would allow is important?*

- Direct Subsidy. *Can the goals of rate, entry and other controls be alternatively accomplished through direct government subsidies? Where cross subsidies or "invisible" subsidies appear to be created by regulation, would there be greater efficiency and accountability through the use of direct payments, perhaps subject to competitive bidding?*

In some cases just one of these alternatives will be the best approach. In other cases, such as in the cigarette example discussed previously, a combination of these alternatives could be employed. In each case, however, the answers to these questions should determine the appropriate means of government intervention in the marketplace.

PART VI

FRAMEWORK FOR REGULATION

Chapter One

INTRODUCTION

We conclude that much of Federal regulation is justified. However, particularly in the economic area, certain changes are warranted. The need for such modifications is suggested by various causes, including changes in the economy, lessons learned under a specific regulatory approach, or by a lack of justification in the first instance for a specific regulation. Health, safety and environmental regulation generally has a sound basis for some form of continued controls. Yet there is room for much improvement in those areas as well. For example, we find that more effective regulatory approaches are available to accomplish many of those important objectives.

In addition, we find that all too often basic regulatory decisions are based on insufficient analysis and consideration of alternatives. Government intervention should not occur merely because there appears to be a problem in need of a remedy. Instead, government controls should be imposed only where there is a clearly defined problem, and where the projected accomplishments are both significant and not rendered detrimental by serious adverse consequence which result from that action.

We recognize that the effectiveness of Federal regulation, at least relative to costs and burden, is now clearly a matter of widespread interest and controversy. While sometimes aimed at specific programs, popular dissatisfaction is by no means well focused. Rather "bigness", "red tape", "bureaucracy", "paperwork" and—perhaps most of all—money spent are the most often heard expressions of popular concern. Typically no distinctions are drawn among regulatory programs, even those intended to protect consumers or workers, and government activities in general. What is known is that government is spending more and increasingly affecting the daily lives of people—all too often, it is thought, without clear and actual benefits in return for such expense and interference.

California's Proposition 13 recently expressed that dissatisfaction in graphic terms. Just months ago, in June 1978, California voters overwhelmingly adopted Proposition 13 which, by establishing limits on local property tax levels, will slash state revenues by perhaps as much as $12 billion annually. Proposition 13—characterized by many as the first major volley in a taxpayers' revolt—struck a responsive chord and its impact continues to be widely felt. As *Newsweek* observed, "Every once in a while something happens in America that galvanizes its citizenry and shakes up the country." [1] And that accurately describes the public response to the passage of Proposition 13.

[1] Newsweek, June 19, 1978, p. 20.

Also Proposition 13 inspired a raft of Congressional proposals, all aimed in one way or another at reducing the costs of government.[2] The popular titles of that legislation—for example, the "Regulatory Cost Reduction Act", "National Commission on a Balanced Budget Act", and the "Government Accountability Act"—illustrate that intended purpose. Within weeks of Proposition 13's passage, measures introduced in the Senate would: mandate state "advisory" referenda on whether Federal spending should be reduced and on whether a balanced national budget should be obtained; [3] establish a commission which would as its "sole objective" recommend to Congress a constitutional amendment to insure a balanced Federal budget; [4] limit increases in Federal budget outlays to existing real dollar levels, and exclude from gross income for tax purposes an amount reflecting loss of purchasing power attributable to inflation; [5] instruct the President to provide to Congress a "report on the management of the Executive Branch", which would rank various Federal programs and identify those specific activities found to be inefficient or wasteful; [6] and require the President to submit recommendations to Congress for reducing by up to 5 percent annually the cost imposed on society by Federal regulations.[7]

Proposition 13, it is important to note, should not be viewed as an isolated or phenomenal event. Rather, it is but one, albeit very significant, indicator of a ground-swell of public uneasiness with the present course of government and the consequent burdens that are imposed on citizens. As such, it is helpful to understand that event in context, something that can be in part illustrated by citing related though coincidental events of about the same time. This brief recital indicates part of what the public heard about the cost and efficiency of government in about a six week period following the California Vote on June 6, 1978:

June 15: The U.S. Supreme Court decided that the Endangered Species Act required abandonment of a nearly completed dam project, at an estimated loss of $53 million, in order to avert the threatened extinction of a three-inch, tannish fish known as the snail darter. As the Supreme Court suggested, it would be "curious to some" that millions of dollars would be lost in order to save a small number of fish, the existence of which was not even known until the dam was nearly 80 percent complete. But that, in the opinion of the Court, was what the plain terms of the Act required.[8]

June 16: The General Accounting Office announced its findings that 13 Federal agencies spent almost $36 million in a three year period in order to comply with the provisions of the Freedom of Information and Privacy acts. The lion's share of those funds were required for employees' salaries.[9]

June 22: The New York Times reported that the efforts of the Occupational Safety and Health Administration to protect the workplace safety of Federal workers had been to date largely unsuccessful and, as a result, sickness and injury costs continued to skyrocket. According to that published report, such annual costs now total some $5 billion annually for compensation, sick pay, loss of worker time, damage to equipment and other losses. The Secretary of Labor indicated that OSHA does not at present have the necessary legal authority to reverse that situation.[10]

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[2] See Washington Star, June 20, 1978, pp. A1, B4.
[3] S. 3353 (July 31, 1978).
[4] S. 3167 (June 7, 1978).
[5] S. 3168 and 3166 (June 7, 1978).
[6] S. 3266 (August 2, 1978).
[7] S. 3262 (June 29, 1978).
[8] See Tennessee Valley Authority v. Hill, Slip Op 76-1701, (S. Ct., June 15, 1978).
[9] General Accounting Office, "Data on Privacy Act and Freedom of Information Act Provided by Federal Law Enforcement Agencies," June 16, 1978.
[10] New York Times, June 22, 1978, p. A1, 15.

July 7: Published reports indicated that the Labor Department's Mine Safety and Health Administration proposed to require that miners be provided a self-rescue, breathing device. Based on industry statistics, it appears as though every life saved by that device could cost about $6 million.[11]

July 10: It was disclosed that a review conducted by the Council on Wage and Price Stability of about a dozen proposed regulations indicated that the private sector would incur annual compliance costs (if those rules were issued, of between $15–$35 billion, and capital costs of about $30–$60 billion. All of which, according to COWPS will "lead to further increases in costs and prices that exacerbate the inflationary impact." [12]

July 26: A study of regulatory compliance costs conducted by Caterpillar Tractor Company was reported. The company stated that in 1976 it spent $67 million to comply with such Federal requirements—an amount which was about ¼ of what the company spent for the purchase of raw steel, and either equaled or exceeded total expenses for social security and medical benefits for employees. Over 90 percent of that cost was due to regulations imposed by two Federal agencies, EPA and OSHA, neither of which existed prior to 1970. The study also indicated: "Obviously Caterpillar as a company does not absorb all regulatory costs. Most of the costs are passed on to the users of our products and ultimately to the consumer in many forms." [13]

With news such as that appearing day after day it is little wonder that there is a deepening public concern about the effectiveness of government programs, particularly those which attempt to regulate business activities. More, probably much more, will be heard on the issues of government cost in the future. Certainly it now appears that there will be ever-increasing demands for effective Federal action to control costs, eliminate waste, and insure periodic review and appraisal of existing programs.

Responding to such concerns requires a clear understanding of the purposes which regulation should serve, and the relative merit of alternative regulatory instruments. For example, suppose a Congressional purpose is to assure scheduled airline service to small communities. In formulating and deliberating on proposals for change, Congress should be prepared to determine whether this purpose is best served by regulation, which fixes fares and restricts entry, or whether other means, such as direct subsidies or tax preferences, would serve better. In other cases, unfettered market operation might be the appropriate alternative. In still other cases, providing information, enforcing standards, imposing fines or charges, or attaching conditions to franchises, leases or other contracts might be preferable.

The purpose of this study is to provide the substantive foundations for meaningful and beneficial regulatory reform. It describes the various purposes which might be served by regulation, enumerates and illustrates possible benefits and costs, evaluates alternatives, and analyzes problems of transition to new regulatory regimes. The study focuses on the economic substance of regulation, not on procedure. Procedural matters have been addressed in the other volumes of the Committee's Study of federal regulation. This volume is directed toward consideration of the following questions: What aspects of economic activity should be regulated? What are the economic effects of present regulation? How have changes in technological and economic conditions affected the appropriateness of present regulation? What

[11] New York Times, July 7, 1978, pp. D1 and D7.
[12] Washington Star, July 10, 1978, p. A2.
[13] This Caterpillar study was reported by Senator Percy, in the Congressional Record, July 26, 1978, pp. S11883-4.

are the merits of the alternatives to present regulation? What transitional problems might be faced in moving to alternatives?

The study is unique in a number of ways. It is the first attempt by Congress to address broad issues of the substance of regulation. It attempts to synthesize and evaluate a wide range of often highly technical economic literature to provide a useful and up to date picture of rationales, effects, and alternatives. It is also unique in scope, addressing not only standard or "old line" economic regulation, but also the "newer" regulation of safety, health and environmental problems.

While many of the costs of such regulation may be quite visible in government mandated capital investments and higher production costs, the benefits may be widely diffused and slow to materialize. These benefits could include cleaner air and water, and less frequent injury and disease.

Heightened concern with costs and, it appears, with government intervention itself, has followed closely on demands for more government action. This tension is likely to be with us for some time. And as OSHA extends its inventory of health hazards, as the CPSC begins more vigorously to promulgate standards and ban hazardous products, and as the FTC begins more active use of its rule making powers in consumer protection areas, the tension between these competing objectives is likely to increase. Regulation's impact will become more visible to all workers, businessmen, and consumers.

And, as with economic growth, rising incomes, and new problems, many segments of society will come to demand greater protection of safety, health and environmental concerns, so many of the tradeoffs between these and other aspects of human welfare and living standards become more apparent.

This heightening of concern will bring increasing demands for Congressional action to reform regulation. Some will advocate extension and tightening of regulations; other, particularly in the business community, are likely to demand relaxation and greater reliance on "market forces." Effective response to these challenges requires clear Congressional understanding of the merits and failings of private market operation, the relative efficacy of present and alternative regulatory mechanisms, and problems of transition to new regulatory regimes. This report attempts to address these vital needs.[14]

Such an understanding of the underlying problems and alternative solutions is also needed so that Congress can design regulation to allow for and evolve with technical and economic change, which in turn renders many regulations obsolete or ineffective. Very often change requires reappraisal and modification of regulatory controls, and we hope this examination provides the framework Congress needs properly to design those alterations in regulation.

In spite of the large number of regulatory agencies and public enterprises the American economy is still preponderantly one of private

[14] It is, of course, true that the need for procedural reform and streamlining will continue to be critically important. It is also true that, by reducing delay and other problems, procedural reform can mitigate complaints of undue costs or failure to meet social objectives. The focus of this report is, concerns the basic issues of the proper scope and form of Federal regulation. Previous volumes of this Study address issues of delay, Congressional oversight, quality of appointments, overlap among Federal agencies, and public participation.

enterprise. Most consumption, production, and investment decisions are made by private firms and individuals operating on generally unregulated markets. Increasingly, these decisions occur in a context defined by explicit regulation governing such areas as the use of environmental resources, the health and safety aspects of working conditions, and product safety.

And in some markets—including railroads and oil—private decisions are supplemented or supplanted by explicit regulatory controls on prices, rates of return, investment, and product quality. The general topics of this report are the proper "mix" of private and public decisionmaking in the mixed economy, and the proper mix of alternative means of public decisionmaking. The stage for this discussion is best set by looking briefly at the case for unregulated private markets.

Reduced to fundamental terms, any society must provide answers to three basic economic questions: What shall be produced? How shall it be produced? For whom shall it be produced? Market organization is one way of providing answers to these questions. Other methods include tradition, and command or centralized planning. All societies use differing mixtures of these three basic methods. The United States, is in many respects close to a full market economy, though elements of tradition (for example, parents support their children) and centralized decisionmaking (for example, the activities of the Federal Reserve Board and federal setting of minimum wages) are also important.

There is a strong case for private decisions in free markets. When markets are competitive and participants well informed, firms are forced to produce those goods for which consumers are willing to pay, and to do so at minimum cost. Firms that do otherwise experience losses and, if they persist, bankruptcy. Products are offered in a range of varieties and qualities, as determined by consumer tastes and incomes and by costs of production. Shortages are eliminated automatically either through rationing by price or incentives offered to expand production of scarce commodities. The prospect of profits provide a strong inducement to find and exploit new products and techniques. More generally, decisions are made by those directly concerned, and by those with specific knowledge of the situation. The flexibility of the market system and its adaptability to change provides the most general case for private decisions on free markets.

However, the market economy cannot always work either perfectly or to the satisfaction of all concerned. First, the market may fail to achieve efficiency—to deploy society's scarce resources so that the most valued mix of products is produced at minimum cost. These "market failures"—or failure of unregulated markets to achieve efficiency—may arise for a variety of reasons, including monopoly, costly or imperfect producer or consumer information, and externalities—that is, spillovers such as air pollution. As discussed later in this study, all of these conditions can lead to situations in which the private benefits or costs which direct the activities of firms and individuals differ from benefits or costs to all individuals and firms taken together. Yet, these total or "social" benefits and costs should guide economic activity. There is then a potential role for government action to correct the im-

balance. These imbalances can be in a number of forms: monopoly can lead to underproduction of particular goods and services; so too, allowing free use of the environment for waste disposal leads, predictably, to overuse of this scarce resource and undue damage to public health and welfare and poor worker information on safety hazards can lead to employment under dangerous conditions. Some form of regulation is one means of correcting such "market failures," though it is not the only option available.

Market results may be unacceptable even when no "failures to achieve efficiency" exist. Efficient market results based on willingness to pay and on production costs may appear unfair if, for example, rural consumers must pay more for phone service than urban, or if owners of oil and natural gas properties gain from OPEC price escalation. So too, consumers and workers may collectively demand more protection from health or safety hazards than might seem perfectly efficient in market terms. Such demands may seek to lessen the burden of decision making costs, or protect particular segments of the population. Private market actions may not take sufficient account of national concerns, such as energy independence or security needs. As with problems of "market failure" to reach efficiency, regulation of some form is but one of several available options.

Chapter Two

THE CONDITIONS FOR REGULATION

A. Market Failures: Conditions Under Which Regulation Can Increase Efficiency

Unregulated competitive markets can, under proper circumstances, result in an efficient allocation of resources. The firms competing in such markets will produce those goods on which consumers place the highest value in the quantities that consumers are willing to pay for and by methods that minimize production costs. Yet, the real world economic system contains many cases of market failure—cases where markets do not operate efficiently for one or more of several reasons. A common response to such market failure, both actual and perceived, has been regulation, though there have been other reasons for regulation as well. The purpose of this section is to review the major justifications for Federal regulation.

1. Natural monopoly

The classic case for regulation is natural monopoly. If in some industry cost per unit output falls until the efficient size of operations fills all or most of the market then competition may not be workable. Competition is apt to be short lived and unstable because even if there is more than one producer in the market at one time, the larger firm will enjoy lower costs and will be able ultimately to win the entire market from its smaller, less efficient rivals. Moreover, from the point of view of efficiency, monopoly is probably preferable to competition in a decreasing cost industry. This is true, because an industry made up of a number of small firms would have higher cost per unit than a single monopolist would.[1]

However, most people find unregulated monopoly unacceptable. A monopolist may be able to set prices well above cost, which has two undesirable effects: It enriches the monopolist at the expense of the rest of society, and it may also result in too little output. Consumers would be willing to pay the cost of additional output, but the monopolist may be unwilling to reduce his price enough to sell the extra output. In addition, an unregulated monopolist might find it profitable to discriminate in price. That is, he might charge higher prices for those whose demand is relatively unresponsive to price. The public has often objected to such price discrimination as unfair; however, by providing incentive to expand output, discrimination could alleviate the efficiency effects of monopoly restrictions.

Thus, decreasing cost industries present society with a dilemma. Competition in such industries is unstable and inefficient, but unreg-

[1] Some might object to attaining efficiency at the cost of high profits to the monopolist. And, shielded from competitive pressures, monopolies may become soft and inefficient.

ulated monopoly can result in high prices and discrimination. Regulation is a common means of resolving that dilemma. Its presumed purpose is to permit or even require monopoly, while controlling prices to avoid excessive profits und undesirable price discrimination.

Decreasing costs occur in many regulated industries. Commonly, the economies are attributable to high density of service along a pipeline or wire or route. More than one firm offering service along the same route may very well result in duplication of facilities and higher costs per unit. On the other hand, a monopoly on a given route need not require firms that are absolutely large, or that dominate entire national markets. And, as demand grows, the market may expand sufficiently to hold several efficient firms.

Some of the most widely accepted cases of decreasing cost industries are local distribution utilities such as electricity, gas, water, telephone, and cable TV, where parallel distribution systems would entail duplication and presumably higher costs as a result. Cost per unit is lower the more electricity, gas, water, and so forth is sold per mile of line. Even in these cases, however, large absolute size is not usually required. Small monopoly systems serving small communities appear to lose little or nothing compared with those serving large communities. Moreover, related lines of business such as natural gas production and electric generation are probably not natural monopolies.

Outside of local distribution utilities, which are generally regulated at the State rather than the Federal level, the main cases of "natural monopoly" are oil and gas pipelines, electricity transmission and, to an extent, long distance telephone service. For example, total pipeline construction costs are roughly proportional to the circumference of the pipe and therefore to its radius, while the volume of gas or oil the pipeline can transmit is proportional to the pipeline's cross-sectional area and therefore to the square of its radius. Since the square of the radius increases more rapidly than the radius, it follows that cost per unit decreases continuously as the pipeline's capacity increases. Indeed, this understates the economies of large diameter pipe because friction in transmitting oil and gas is also reduced as capacity grows, and because the amount of right-of-way needed is practically the same regardless of pipe capacity.[2]

The natural conclusion is that the lowest cost way to transmit oil or gas between two points is through a single large diameter pipeline. However, there may still be room for some competition if a consuming center is supplied from more than one gas- or oil-producing area.

The case of electric transmission is similar. Transmission line construction cost rises approximately proportionately with voltage while transmission capacity rises with the square of voltage so that unit transmission costs fall as capacity rises.[3] Moreover, line losses also decline as voltage increases. It follows that the lowest cost of transmission between two points is with a single high voltage transmission line and that the possibilities of competition in transmission are therefore extremely limited.

In other areas, technical change has eliminated natural monopolies that once existed. The economies of scale in railroading are mixed. A

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[2] Leslie Cookenboo, "Crude Oil Pipelines and Competition in the Oil Industry," Harvard University Press, 1955, pp. 8–32; Alfred E. Kahn, "The Economics of Regulation," vol. II, John Wiley and Sons, 1971, p. 153.

[3] Federal Power Commission, "1970 National Power Survey," p. I–14–15.

number of statistical studies have shown that moderate sized railroads are as efficient as large ones,[4] but the differences among them are mainly a matter of distances covered and number of points connected. What counts in determining the feasibility and efficiency of competition is the effect of increased traffic on costs over any given route. Greater traffic will mean more and longer trains over the same right-of-way and therefore lower costs at least until two tracks are fully utilized.[5] This implies that a single line would provide service at less cost on most routes.

When rail regulation began in 1887, the largest cities were connected by more than one railroad, but thousands of communities were served by only one. Therefore, competitive possibilities were very limited in most city-pair markets. The opportunities for competition among the railroads are still limited, but the situation has changed completely since the 19th century due to trucking and the development of an efficient highway system. As a result, railroads today face intense competition from trucks on most of the freight they haul. Even if competition among themselves must be limited, competition from truckers assures that, on most routes and for most commodities, no monopoly of any significance can exist for the railroads today.

Long-lines telephone service is another area where technical change has partially eroded a natural monopoly. In the early 1940's, total long-line capacity was fairly limited. For instance, there were only 800 circuits connecting Philadelphia and New York. At that time the lowest cost method of connecting even the largest cities was with a single coaxial cable. Since then demand has grown enormously. A single network television transmission requires 500 circuits. By the late 1960's, there were 79,000 circuits connecting New York and Philadelphia. At the same time, microwave relays had developed. Microwave transmission costs approach a minimum at about 1,000 to 1,200 circuits, so there is room for a number of efficient microwave transmission companies connecting large cities.[6]

The Federal Communications Commission has required the local telephone systems to interconnect with independent microwave carriers.[7] These carriers now offer leased line and data transmission service in direct competition with the Bell system between large cities. This new competition has resulted in a major restructuring of Bell system leased line rates. Yet still newer technology using satellites can offer competitive leased line service to any community large enough to justify an earth station. Individual message service remains a monopoly, however, because of the difficulty of coordinating long-lines and local switching.

A third area where technical change has made some competition possible is in the generation of electricity. Until the 1960's line losses made very long distance transmission of power uneconomical, but with

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[4] George Borts, "The Estimation of Rail Cost Functions," Econometrica, January 1960; and Kent Healy, "The Effects of Scale in the Railroad Industry," Yale University Press, 1961.

[5] James R. Nelson, "Regulation of Overland Movements of Freight, in appendix to this volume; Theodore E. Keeler, "On the Economic Impact of Railroad Freight Regulation," Center for the Study of American Business, Washington University, Working Paper No. 17, November 1976, pp. 20–25.

[6] This discussion is derived from Leonard Waverman, "Regulation of Intercity Telecommunications," in Almarin Phillips, ed., "Promoting Competition in Regulated Markets," Brookings, 1975, pp. 209–233.

[7] In re Microwave Communications, Inc., 18 FCC 953 (1969) and Specialized Common Carrier 29 FCC 2d (1971).

the much higher voltages that are used today it has proven profitable to transmit as far as 850 miles (from the Columbia River to Los Angeles). In the more densely populated parts of the country all major utilities are interconnected, and it is technically feasible for plants anywhere in a wide area to supply any consuming center connected with the transmission network. As a result all the plants in a region could compete for the service to the distribution system serving any particular city. In fact, very little such competition has developed, largely because the bulk of the local distribution systems (which really are natural monopolies) are owned by the generating companies that serve them.[8]

Airlines are even less appropriately pictured as natural monopolies. We could apparently have several dozen airlines without sacrificing any efficiency.[9] On individual routes there might be room for only a few, but the ease with which other airlines could enter any particular major city-pair route in the absence of regulatory restraints would put severe limits on the monopoly power of the firms that served that route. Even in the absence of regulation, however, many smaller cities would be served by only one airline as most of them are now, but on short routes the monopoly power of such a carrier would be slight because of competition from surface transportation.

The trucking industry has never been considered a natural monopoly. There are virtually no economies of scale for shipments of truckload lots. Small firms have little or no disadvantage compared with firms that operate a number of rigs. In fact, thousands of independent owner-operators compete successfully with larger firms for much of the business. However, a large part of the common carriers' business is less-than-truckload-lot service, and there are some economies of scale here. Less-than-truckload-lot trucking involves the operation of terminals where freight is accumulated for shipment to particular points. A firm with larger volume can accumulate full loads more rapidly. Although quite small firms (a few million dollars of annual revenue) can operate terminals efficiently,[10] there is reason to believe that shippers prefer to deal with single trucking firms instead of having their freight interlined (transferred from one trucker to the next). Absent regulatory controls, the less-than-truck-load-lot freight industry might be made up of far fewer than the present 15,000 common carriers. It is difficult to imagine that it would be more than moderately concentrated in major markets, however.[11]

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[8] Leonard W. Weiss, "Antitrust in the Electric Power Industry," in Almarin Phillips, ed., Promoting Competition in Regulated Industries, pp. 135–155.

There are substantial economies of scale in generation, but recent studies show that they are exhausted at a point that would still leave room for several dozen efficient sized generating companies in the country. The most efficient size of generating company is about the size of Duke Power or Potomac Electric Power. See Laurits Christensen and William Green, "Economies of Scale in United States Electric Power Generation," Journal of Political Economy, August 1976, pp. 655–676.

[9] Theodore Keeler, "Domestic Trunk Airline Regulation: An Economic Evaluation" in appendix to this volume.

[10] An unpublished statistical analysis done by Richard Klem of the Department of Transportation studied 359 general freight common carriers which received 90 percent of their revenue from intercity freight in 1971. It showed costs per shipment reaching a minimum in firms with total cost of about $7 million and were higher for larger firms.

[11] Daryl Wyckoff, "Factors Promoting Concentration of Motor Carriers under Deregulation", Proceedings—Fifteenth Annual Meeting, Transportation Research Forum, 1974, pp. 1–6.

After trucks were deregulated in Australia, 5 freight forwarders developed who handled 67 percent of the country's motor freight. After deregulation in Britain, 3 firms acquired about 20 percent of the market. Both countries are economically much smaller than the United States, however, and neither has the antitrust check on concentration growth via mergers that we have.

2. Destructive competition

A second justification sometimes offered for regulation is that in the absence of regulation competition would be "destructive." In other words, without regulation, an industry or a major part of it might operate at a loss for long periods. Alternatively the industry might be so cyclical that capacity would fluctuate wildly. This could occur in an industry where a large proportion of costs are fixed and where the resources employed by the industry are immobile. When there is excess capacity in a competitive industry with these characteristics price can fall far below average cost. This is because individual producers minimize their losses by continuing to produce so long as their variable (avoidable) costs are covered, since they would incur their fixed (overhead) costs whether they produced or not. If most costs are variable, price cannot fall much below average cost because producers would certainly curtail production. Similarly, if resources are mobile, depressed conditions in an industry or a region would result in the shift of resources to other employments. Industries with high fixed costs and immobile resources include agriculture and coal mining. In the 1930's they were characterized as "sick industries."

What is "destructive" about large and long-lasting losses? Some economists have suggested that they would result in long periods of inadequate investment and slow technical progress which in turn might lead to poor service and periodic shortages.[12] The poor physical condition of the eastern railroads after years of losses and widespread bankruptcies might be an example.

Another scenario that has sometimes been suggested is that periods of large losses will result in wholesale bankruptcies and the shakeout of many small producers with the result that the industry in question becomes highly concentrated in a few large firms. For example, this was predicted when the Securities and Exchange Commission required competitive brokerage rates. While some consolidations have occurred the industry has not become highly concentrated.[13]

A third and related notion is the possibility that powerful firms might engage in predation. In other words, they might temporarily reduce prices to very low levels, possibly below average variable costs, with the intention of driving weaker firms out of the industry. Then, after attaining a dominant position, they would switch to a high monopoly price. Economists are generally skeptical about this possibility. Since it necessarily involves large losses at first and profits only much later, the subsequent profits would have to substantially exceed the previous losses in order to be worthwhile. Generally it would be more profitable for the powerful firms to collude or merge with the weaker firms—but if the industry is fully subject to the antitrust laws, collusion and monopolistic merger would, of course, be illegal. Collusion and merger aside, predation would still not be profitable if entry into the industry is easy. This is because with easy entry, subsequent profits cannot substantially exceed competitive levels without attracting new competitors. Predation could not possibly be rational in industries like trucking, brokerage, or gas stations where

[12] Alfred E. Kahn, "The Economics of Regulation," vol. II, pp. 172–178.

[13] Hans Stoll, "Regulation of Securities Markets: An Examination of the Effect of Increased Competition" in appendix to this volume.

entry is very easy or would be in the absence of regulation. It might be profitable if new entry were blockaded, as might be the case with large economies of scale or very strong consumer loyalties to the powerful firms, but the most serious barriers to entry in the regulated industries are the regulatory licensing requirements themselves. Even absent regulation, predation would probably be rare. Careful empirical studies have revealed very few cases of predation in the unregulated industries since 1890.[14]

Finally, even if there is no harm to society as a whole, competition in industries with high fixed costs and immobile resources may be more painful for those in the industry than Congress will accept. This is a reasonable interpretation of our maintenance of standby price supports in agriculture.

Would presently regulated industries be characterized by "destructive competition" in the absence of regulation? Table 2–1 shows the ratio of assets to revenues in the regulated industries and in selected manufacturing industries. Capital costs are generally fixed and capital is often immobile in the short run, so high values for this ratio may be symptomatic of potentially "destructive" competition. Capital costs are high in many regulated industries. However, competition in the absence of regulation would be important in airlines and trucks.

TABLE 2–1. *Total assets as percentages of annual sales in selected industries, 1972–75*

	Percent
Unregulated:	
Motor vehicles and equipment	58
Textile mill products	63
Primary iron and steel	98
Petroleum refining	127
All manufacturing	76
Regulated:	
Class A and B electric utilities	389
Class A telephone carriers	[1] 327
Class I railroads	263
Natural gas pipelines	225
Trunk airlines (1973)	134
Class 1 and II common carrier truckers (1973)	20

[1] Figure is for gross book cost of communications plant divided by operating revenue.

Source: Federal Trade Commission, Quarterly Financial Report, United States Manufacturing Corporations, First Quarter, 1973; Moody's Public Utilities and Transportation Manuals, 1974, Aviation Daily, Airlines Statistical Annual and ICC, Transportation Statistics of the United States, 1973.

The railroads were marked by severe price wars in the 19th century, and a major purpose of regulation was to end that price competition.[15] Today, many railroads are burdened by huge excess capacity partially due to the ICC's reluctance to permit abandonment of unprofitable service. In some parts of the country, such as the Northeast, where large-scale mergers have occured, the possibility of interline price competition is slight. But there are still important cases of competing railroads elsewhere. And in these cases, if deregulation occurred, the existing excess capacity could lead to serious rate wars. This, in turn, could result in bankruptcies, inadequate maintenance, and deterioration of rail service.

[14] Roland H. Koller II, "The Myth of Predatory Pricing: An Empirical Study," Anti-Trust Law and Economics Review, summer, 1971.

[15] Paul W. MacAvoy, "The Economic Effects of Regulation," MIT Press, 1965.

In all parts of the country, whether or not they face competition among themselves, the railroads face intense competition with trucks. Regulation has not prevented this competition, which accounts for the poor financial condition of the railroads today. It seems doubtful whether truck-rail competition would be any more intense in the absence of regulation.

"Destructive competition" seems even more unlikely in the cases of airlines and trucks. Their capital-revenue ratios are much lower than those of the railroads. Moreover, their capital is much more short-lived than railroad equipment, and it is, by its very nature, highly mobile. Excess capacity in any one region could quickly be eliminated by the transfer of aircraft or trucks to other regions or, in the case of airplanes, even outside the country.

Also, more than half of the trucking industry is already exempt from regulation. This is true of private trucking, where firms haul their own goods, and of trucks that haul agricultural products. Even in the regulated sector of trucking, a large proportion of the trucks are owned by independent owner-operators who compete among themselves in leasing their trucks and their services to the common carriers.[16] In spite of the highly competitive organization of most of the industry, it has shown no evidence of "destructive competition".

Much of the concern about "destructive competition" dates from the great depression of the 1930's. At that time, it was one of the arguments for regulation in both trucking and airlines.[17]

The fact is that competition was very severe, and the economic climate unfavorable, in almost all lines of business during the 1930's. Today, with the national commitment to maintaining high levels of employment and output, there is little reason to expect exceptionally severe competition in either trucking [18] or airlines.

Moreover, not all losses and bankruptcies are bad. They do serve to weed out the inefficient firms and eliminate excess capacity. A great advantage of a competitive private enterprise economy is that it compels firms to produce what the public wants at the least cost possible. Thus losses by firms with high costs or with great excess capacity are generally in the public interest. They force firms to adopt efficient production techniques and to shift out of industries where capacity greatly exceeds demand. And low prices encourage fuller use of existing capacity. One of the problems with regulation is that it often protects firms from having to make such adjustments. As such, regulated firms understandably are prone to read—and publicize—most threats of loss as symptoms of destructive competition.

3. Regulation to force decisionmakers to take full account of the costs of their actions—Dealing with external costs

A third justification for regulation arises when there are external costs—costs that fall on persons other than those who cause them.

[16] D. Daryl Wyckoff and David H. Maister, "The Owner-Operator: Independent Trucker," Lexington Books, 1975.

[17] In trucking, many independent drivers had acquired second hand trucks and were willing to provide service for very low rates because they had no alternative employment opportunities (Alfred E. Kahn, "Economics of Regulation," Volume II, 1971, pp. 178–193). In airlines the competing firms had bid for new routes by offering very low postal rates anticipating that resulting losses would be made up by larger subsidies subsequently. (Richard E. Caves, "Air Transport and Its Regulators," Harvard University Press, 1962, p. 384). Neither condition would apply today.

[18] In Britain, where the trucking industry was deregulated in 1968, there was no evidence of destructive competition in the period that followed. Thomas G. Moore, "Trucking Regulation—Lessons from Europe," American Enterprise Institute, 1976, pp. 33–35.

Examples are air and water pollution. A mill that produces a great deal of smoke and soot imposes costs on its neighbors in the form of polluted air, bad health, and unsightly surroundings.

Since these costs do not fall primarily on the firm that causes them, the polluter may choose to ignore them. If they did fall on the firm, the polluter would attempt to minimize the sum of these costs, as well as the costs of prevention and conventional internal costs, such as labor and materials. In addition, if these external costs fell on the firm they would be reflected in product prices, and consumers would thereby be encouraged to avoid purchasing pollution-related goods. Altogether, external costs can result in wasteful methods of production and a socially undesirable mix of products. In the case of environmental pollution, the problem arises because business firms, governments, and individuals treat the environment as a free good when it is in fact scarce.

The increased concern about the environment in recent years has resulted in Federal legislation aimed at forcing consideration of external costs. The Clean Air Acts of 1963, 1966, and 1970,[19] the Federal Water Pollution Control Act of 1972,[20] and the Noise Abatement Act of 1972 [21] are examples of that initiative. Pursuant to those and other statutes, the Environmental Protection Agency has been authorized to order pollution abatement practices by industry, government, and individuals. If successful, EPA action will impose social costs on polluters, and thereby increase the costs and prices of pollution-related products. Environmental regulation has the effect of requiring that all or at least a portion of the external costs be sustained by the regulated sector and those using its products.

In some cases the externalities take the form of risks imposed on the public as a result of industrial processes. A prime example is the risk associated with nuclear power. The potential social costs of nuclear power are unknown but they could be very high. A major function of the Nuclear Regulatory Commission is to establish and require detailed safety procedures intended to reduce the risks of large social costs. In effect, the commission decides for society what level of risk is acceptable, and determines procedures necessary to reduce risks to at least those levels.

Certainly, negligence laws alone would not have the effect of forcing the firms that build and operate nuclear plants to take those risks into account. The possible damages may be so large as to be uncollectable. They could bankrupt the firms involved if an accident did occur. Moreover, under the Price-Anderson Act, the total liability of the firms involved is limited and the government indemnifies the firms for some of the liabilities that do apply.[22] Such limitation of liability does reduce incentives to lower risks, and so could justify safety regulation.

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[19] 42 USC 1857 et. seq.
[20] 33 USC 1251 et. seq.
[21] 42 USC 4901 et. seq.
[22] The Price-Anderson Act was passed in 1957 and extended in 1965 and 1975 (42 U.S.C. 2210). At present the firms are responsible for an initial $125 million of insurance plus an obligation of up to $5 million per plant to an industry-wide self-insurance pool in the event of accidents. The government indemnifies the firms for any losses above that amount up to $560 million. As the number of plants increase the Government's obligation is decreased, and it ends when there are 87 plants. Thereafter the total industry obligation increases by $5 million for each additional plant built.

A somewhat similar situation exists with occupational health and safety.[23] Employment conditions can be more or less safe depending on employer and employee actions. Absent regulation, employers would still have some incentives to reduce work hazards. If workers are aware of the risks and try to avoid them, the result could be higher wage rates for risky jobs. Employers would then reduce payroll costs by reducing job hazards. Safe conditions could also reduce plant down-time and losses of skilled workers. The links in this chain of events seem weak, however. Workers' knowledge of job hazards is surely incomplete, especially in the health area. It is also unclear to what extent they attempt to avoid those risks and therefore how closely risks are reflected in wage rates. Moreover, it is not clear how much an employer can affect the wage rates he pays by adopting safety policies.[24] In general, the labor market mechanism is so tenuous that many would be unwilling to depend on it alone to deal with the occupational safety and health problem.

Perhaps effective negligence laws could also serve to force employers to internalize the costs associated with job hazards. If employees had many accidents and illnesses, an employer would have to pay large damage awards. Those costs could be avoided by undertaking safety and health programs. But, in fact, the linkages here are even more tenuous than those that work through the market place. For one thing, the "reasonable and prudent" precautions that a firm must take to avoid negligence awards might be less than what society feels should be adopted. The threat of suit might be low because of uneven access to legal services. Also the results of suits would be unpredictable, especially in the occupational health area where the relationship between working conditions and illness is often not well understood. In general, results of damage suits are very unpredictable. To avoid those pitfalls, workman's compensation is a "no fault" system. That is, the injured worker is automatically compensated from an insurance fund for work-related injury or illness, and the worker loses his right to sue the employer. Consequently, negligence suits offer little incentive for employee health and safety programs.

Considering the probably weak incentives for voluntary health and safety programs by employers, there is justification for direct government intervention to attain a safer work environment. This is the avowed purpose of the Occupational Safety and Health Administration (OSHA) and the Mining Safety and Health Administration (MSHA), both of which have been created by Congress. Those agencies attempt to reduce job hazards by establishing and enforcing safety standards. An effect of that form of regulation is the imposition of costs on employers, and ultimately on consumers, that would otherwise be sustained by employees in the form of work-related injury or disease. The success of those regulatory controls depends on whether the standards chosen are the least costly way to reduce hazards and whether they are effectively enforced.

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[23] This section depends heavily on Nina Cornell, Roger Noll and Barry Weingast, "Safety Regulation" in Charles E. Schultze, "Setting National Priorities—The Next 10 Years," Brookings, 1976, pp. 457–504; and on Richard Zeckhauser and Albert Nichols, "The Occupational Safety and Health Administration" in appendix to this volume.

[24] For example, industry-wide labor negotiations might prevent safety-related differentials. Still, there would be some tendency for the safer employers to be able to obtain higher quality labor and, hence, lower costs.

Another area where regulation is often justified on the basis of externalities is banking. Certainly bank failures have consequences far beyond the losses to the banks' stockholders. Depositors lose money and, if bank failures are widespread, they can cause or greatly intensify depressions. For these reasons, banks have been subjected to elaborate regulatory controls. Banks are examined by several state and Federal agencies. Entry into banking is strictly limited, and ceilings on interest rates on deposits are imposed in attempts to keep banks profitable.[25] The most important protection against bank failures, however, is Federal deposit insurance for banks and other savings institutions. This guarantee reduces the likelihood of runs on banks, because depositors are assured of their money whether or not the bank fails. In that light, it is not at all clear that the restrictions on entry and interest rate competition are needed to protect the public against bank failures.

4. Inadequate market information

A fourth case of market failure arises where individuals are not sufficiently informed to make "correct" decisions in the market place. Perhaps in a perfect market, where many or most individuals are expert, free choice would lead to the production of those goods upon which consumers put the highest value relative to their costs of production. In that setting, the market might also provide a combination of wages and working conditions in accordance with individual's preferences. However, in a real world where consumers and workers are only partially informed, many decisions will be wrong and some can be disastrous.

Even if everyone had access to all information available and the ability to appraise it correctly, private markets would in many cases produce too little information. Producers and employers have too little incentive to make information widely available. Once it is produced, information spreads freely, so its producers cannot charge all those who benefit. Nor should they. From a social point of view, once information has been generated it is efficient to make it available to all at the cost of dissemination. But this would not allow producers to cover the costs of generating the information—that is, of performing research and rendering technical matters accessible to laymen. The result is that private market forces would generate too little information for efficient market performance. In addition, the information may be too technical to be widely understood, and it cannot be assumed that all or even most people will consult even available information.[26] All of this suggests a government role in the provision and dissemination of information.

Regulation in this area should take two alternative forms, depending in large part on the knowledge of consumers and workers. In areas

[25] National banks are inspected by the Comptroller of the Currency, State banks that are members of the Federal Reserve System are inspected by the Federal Reserve Board, and nonmembr State banks are inspected by the Federal Deposit Insurance Corporation. Minimum interst rates are set by the Federal Reserve Board. Entry restrictions are imposed by State banking agencies and reenforced by the Federal Reserve Board which prohibits interstate branch banking and supervises bank holding companies. Almarin Phillips, "Competitive Policy for Depository Financial Institutions," in Almarin Phillips, Ed., Promoting Competition in Regulated Markets, Brookings, pp. 330–334.

[26] See Zeckhauser and Nichols, in the appendix of this volume.

where it is relatively inexpensive for consumers to evaluate accurate information, the appropriate approach may be to require accurate labeling and to prohibit misleading promotional statements. Where it is very costly or difficult for consumers to acquire sophistication needed to evaluate necessary information, it may be more efficient to license producers and/or to enforce standards. This approach is especially appropriate where uninformed decisions can be dangerous. In practice the line between cases where the standards or information approach is most appropriate is uncertain.

One example of the standards approach is the regulation of food and drugs. It would be foolhardy to expect consumers to acquire the expertise needed to understand and evaluate every possible food additive and prescription drug, since there is a significant possibility of disastrous effects. Similarly, it would be intolerably costly for consumers to inspect the conditions under which meat is slaughtered or food and drug products are manufactured. In the case of prescription drugs, the consumer has very little choice—it is the physician who determines the choice of the most economical and effective drugs.

For each of those reasons, the Food and Drug Administration sets health standards for food additives, drugs, and cosmetics. Also on the consumer's behalf, FDA inspects plants, and requires tests of drugs for both safety and effectiveness. Similarly, the Department of Agriculture inspects packing plants in areas within its jurisdiction. In some of these areas, information disclosures may be preferable alternatives.

The standards approach is also to be found in Federal regulation of airline safety. The Federal Aviation Administration licenses pilots, prescribes aircraft standards and maintenance practices, and specifies flight procedures as well as maintaining the air navigation system. The first three functions surely fall in the category of areas where the consumer is not sufficiently informed to judge. Yet Federal involvement in the air navigation system may better be described as a natural monopoly where private provision of navigational aids could result in duplication, interference, and increased danger as well. More importantly, private markets would produce too few navigational aids, since producers would find it difficult to charge all those who benefited from the system. Incentives to produce would thus be too low and investment in the system too small. If producers were able to exclude nonpayers—for example, by using secret frequencies—service might be priced too high: the cost of an additional plane using the system would be close to zero.[27]

Examples of more recently established agencies that use the standards approach include the National Highway Traffic Safety Administration (which attempts to assure auto safety) and the Consumer Product Safety Commission (which attempts not only to provide information, but to prevent the marketing of unsafe consumer products and to set safety standards for those products that are marketed.) Presumably the case for regulation in these areas also rests on inadequate sophistication on the part of consumers. This is perhaps correct with respect to many technical features of autos and other products. But the National Highway Traffic Safety Administration has gone

[27] This assumes that the airway in question is not crowded. If an additional plane would slow or endanger others, it does impose costs on the system and, properly, should bear these costs.

farther and required installation of seatbelts and devices which have been designed to force occupants to use them. There has been controversy in that regard. It has been argued that, on the issue of seatbelts, consumers can readily judge for themselves. On the other hand, passengers may be denied their choice to use seatbelts if the owner has opted not to install them.[28]

Occupational safety and health regulation, which was treated as dealing with an externality in the previous section, can also be thought of an area where markets work imperfectly because of inadequate information. Workers may not know the risks they face on various jobs and may not be able to acquire the necessary knowledge short of an intolerably costly search. This seems especially likely in the health area where knowledge is generally sparse.

The alternative approach, where consumers are sufficiently sophisticated to make intelligent choices given accurate information, is to police information given to buyers. In addition to its standard setting activities, the Food and Drug Administration requires accurate labels listing ingredients in many foods, drugs, and cosmetics. These labels may have been incomprehensible to the average consumer in the past, but in recent years the FDA has also required information to consumers on calorie content, the protein, fat, carbohydrate content, and to the percent of recommended daily allowances for major vitamins and minerals for food products containing added nutrients or for which nutritional claims are made. This information may be more useful to consumers. Similarly, the EPA tests autos and publishes gas mileage statistics by make of car, the Federal Trade Commission requires accurate labels reporting the materials contained in fabrics and furs, and a voluntary agreement between FTC and the cigarette industry calls for disclosure of tar and nicotine content of cigarettes. In those cases, the consumer is still free to purchase a given product—but with the added advantage of knowing what is being purchased, as a result of the information reported on labels and other notices.[29]

A major interest of the FTC concerning consumer information has been control over promotional statements. The agency has sometimes required firms to disclose to consumers product information, such as octane ratings of gasoline or tar and nicotine content of cigarettes. However, the main thrust of FTC regulations in this regard has been to prevent false and misleading advertising. That approach has been of limited value, because FTC orders merely ruled out the further use of false or misleading statements after they had been made. Typically the adjudicative process required years before becoming final. Even after the order was made final, and compliance achieved, consumers may continue to rely on the false or misleading advertising statements heard in the past. Thus the effect of that advertising was not necessarily addressed by FTC actions. In a few, very recent cases, however, the FTC has issued orders requiring new advertising statements intended to correct previous false impressions. In 1977 one such order was upheld as lawful by a Court of Appeals.[30] If corrective advertising

[28] Also a substantial share of injury costs is shifted to others via subsidized medical care and insurance. This "externality" could justify regulation.

[29] Problems of the proper format for information provision are discussed in Melvin Hinich and Richard Staelin, "Regulation of the U.S. Food Industry," in appendix to this volume.

[30] *Wagner Lambert Co.* v. *FTC*, 562 F. 2nd 749 (1977). The case involved Listerine mouthwash.

becomes standard policy for FTC, information available to consumers could be improved and the incentive of sellers to mislead would be greatly reduced.

The marketing of securities is another example. The Securities and Exchange Commission requires accurate annual reports by publicly held corporations, and accurate and complete prospectuses for each new security issued. These requirements are meant to prevent deceptive practices by corporate insiders, while leaving investors free to buy whatever securities they wish.

5. Regulation to encourage the proper use of natural resources

A fifth reason for regulation is where private exploitation of natural resources leads to poor conservation practices. In the case of a depleting resource, society faces the choice between current and future consumption. Rational conservation policy does not mean not using such resources at all, but rather, using them when they are most valuable. Present and future uses can be compared using a discount rate. For instance, consider a known copper deposit which may be exploited now or at some time in the future. The conservation problem is to determine when it should be exploited. From a social point of view, the solution is to determine what the copper involved would be worth at various times in the future and to compare the present discounted values of those future uses. If the value of copper today exceeds the present discounted value of the copper at any time in the future, then society's economic interest might be best served if the copper deposit is exploited now. However, if the present value of the copper at some future time exceeds what the copper is worth today, then it may be wiser to hold the deposit until that time.[31] One implication of this analysis is that the optimal policy is to exploit the cheapest sources first and postpone use of the higher cost sources until later; by so doing costs can be postponed.

In many cases, private owners of natural resources will make decisions on just that basis. The private owner of copper deposits would maximize its value through exploitation when its present value is greatest. Indeed, the present value of the deposit's most valuable future use will determine its market price, so the owner of the property can sell it off and still realize that value if he does not wish to wait.

This will not be the case, however, if the producer does not have a clear title to the resource. Where producers draw from a common pool of resources as is the case with fishing, no one will have any incentive to conserve because any output he foregoes will simply be taken by other producers. Oil and gas industries are a good example of that principle. Under American law, the oil or gas belongs to whoever brings it to the surface on his own land. Since the oil or gas in a pool can flow underground and since the ownership of pools is often fragmented, oil and gas production became races among property owners to get the oil or gas out before the neighbors took it all.

Regulation has been adopted as a means of preventing the poor conservation practices that result when producers draw from a com-

[31] Other considerations may modify this rule. We may choose to preserve some domestic reserves for military or political reasons even though their market value is greater now than in the future.

mon pool. The major oil-producing states established prorationing authorities that specified the amounts of oil that the owner of a well could produce in a month.[32] The state regulations were reinforced at the Federal level by the "Connolly Hot Oil Act" which prohibited interstate shipments of oil produced in violation of state prorationing laws. In practice, prorationing did more than promote conservation, however. Output was restricted to levels that would clear the market at prevailing prices, so that the price of oil was supported. From the end of World War II until 1972, flush wells (producing under natural pressure) were restricted to less than their maximum allowable rate of production. Since 1972 the oil industry has been running at a maximum allowable rate (which is itself set by the prorationing authorities) because demand has finally exceeded domestic supply. While systematic output restriction by state prorationing authorities is past, the maximum allowable rates of production are still arbitrary. They depend on the depth and spacing of wells rather than on the geological optimum levels of production.

Another commonly owned resource is the electromagnetic spectrum. If everyone were allowed free use and access, chaos could result. Broadcasters using the same frequency would interfere with one another, and reception of signals would be poor or impossible. Some sort of Government intervention is essential if this resource is to be effectively utilized.[33] The response has been to grant the Federal Communications Commission (FCC) the responsibility for licensing users. It licenses broadcasters as to frequency, location, power, and time of day in order to avoid interference.

When the original allocations were made, the actual broadcast license fees were nominal, so in effect the FCC gave away a valuable resource. The result was a larger number of applicants for potentially profitable television frequencies than the airwaves could accommodate. To some extent choices among the applicants were made on the basis of Commission rules including, among others, a limit of seven television licenses per owner (of which only five can be VHF), a limit of one channel per owner in any given market, and preference for local owners; but in the case of the highly desirable VHF channels, these criteria were still not enough to unequivocably choose among candidates. In many cases, the choice that was made was inevitably somewhat arbitrary.

Today competition between applicants arises primarily in the context of license renewals. Virtually without exception renewals are granted, in part because the denial of renewal would have the effect of confiscation of highly valuable assets. If the FCC had adopted the approach used by the Department of Interior with oil and gas leases on the Outer Continental Shelf, and sold frequencies to the highest bidders (perhaps limiting the number of channels per owner) it would have avoided arbitrariness in selecting licensees and would have captured the license value for the general public without the full panoply of regulation.[34]

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[32] For a more complete discussion of prorationing see Wallace J. Lovejoy and Paul T. Homan, "Economic Aspects of Oil Conservation Policy," Johns Hopkins Press, 1967.

[33] Companies could negotiate with each other for use of the spectrum, but deadlocks or breakdowns in negotiation could be costly.

[34] For further discussion of TV licensing, see Roger Noll, Merton J. Peck and John J. McGowan, "Economic Aspects of Television Regulation," Brookings, 1973, pp. 100–20 and Harvey J. Levin, "The Invisible Resource," Johns Hopkins Press, 1971, pp. 340–51.

B. Social and Nonefficiency Rationales for Regulation

The justifications for regulation thus far have represented cases where there was at least the possibility of some sort of market failure. Regulation was then adopted in an effort to bring about more nearly efficient results. However, market failure is not by any means the only reason for regulation. In a number of cases, regulation has been adopted for reasons of equity, as Congress has perceived it, or to promote particular industries that were considered vital.

1. Regulation of competing industries

In some cases, regulatory controls have been imposed on one industry because it was in competition with another industry already subject to regulation. For example, ICC regulation of trucks was initially undertaken largely because the trucks were becoming increasingly important competitors of the railroads, which were already subject to Federal regulation. The railroads lobbied actively for truck regulation during the late 1920's and early 1930's as the trucks cut increasingly into their freight business. Legislation requiring such regulation was finally passed after many truckers had become convinced by the severe competition of the early depression years of the desirability of Federal controls.[35] The natural monopoly structure of the railroads which might justify their regulation certainly did not apply to trucks, but the desires of the affected carriers prevailed, nevertheless.

To cite another example, the FCC's regulation of broadcasting was extended to cable TV—although cable does not in any way present an interference problem which was the basic justification of broadcast regulation. In the early days of cable, when it largely served to bring the broadcast signals to remote areas and did not threaten over-the-air broadcasters, the FCC showed no interest in regulating it. But when cable began importing signals which made it capable of success in larger cities and thereby in direct competition to broadcasting interests, the FCC asserted jurisdiction and was upheld by the Supreme Court.[36] The Commission's justification for its regulation of cable was that it affected the profitability of over-the-air broadcasting and might make some local stations unprofitable, thus reducing service to noncable customers. Some FCC policies in regulating cable, such as the requirement that all local signals be carried and the prohibition of importing simultaneous duplicate programing, may appear noncontroversial. But the limits the FCC sets on the number of imported signals and the requirement that they be from the nearest adjacent sources greatly reduces the potential choice of programs by affected viewers largely in order to maintain broadcasters' profits. It should be noted, however, that recently FCC justifications for cable TV regulation have been a matter of considerable controversy in various court rulings.[36a]

2. Regulation to encourage the provision of service to small communities

Another important objective of Congress in regulation is to assure service to small communities. This has been an explicit purpose of the

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[35] James C. Nelson, "The Motor Carrier Act of 1935," Journal of Political Economy, August 1936, pp. 464–471. An important reason for the truckers' support of the act was the ruling by the Supreme Court that the National Industrial Recovery Act was unconstitutional.

[36] Brue Owen, "Cable Television" in appendix to this volume.

[36a] *Cf. Home Box Office, Inc.* v. *FCC*, No. 75–1280, USCA–D.C., March 25, 1977.

CAB at least since it decided to license local service airlines in 1943. The Board has paid subsidies to airlines based on the local service offered, and until recently the "system need" for revenue of the local service carrier. In addition, unsubsidized trunk airlines contend that some of the routes they fly are not profitable and would be abandoned in the absence of regulation.

Similarly, the ICC has been repeatedly concerned with local service in railroad abandonment cases. The agency has often required railroads to continue service on branch lines covering losses there from earnings on more heavily traveled routes. Under recent legislation [37] direct subsidies are now paid to unprofitable branch lines. No such subsidies exist for trucking, but the industry argues that without regulation, many small communities would not receive less-than-truck-load-lot service. If this is correct, it implies that motor carriers compensate for losses on thin routes by profits on major routes.

It is a matter of controversy whether such cross subsidization is necessary, whether it is effective in trucking and airlines, or even whether it exists at all. It is most likely in the case of railroads. Many roads have pressed for abandonment of unprofitable branch line service. Such abandonments might be costly to communities where local employers depended heavily on rail shipments. In the cases of airlines and trucking, the abandonment issue is more suspect. Scheduling competition among airlines on the long hauls appears to result in so much excess capacity that excess profits there are eliminated. It is doubtful whether any profits are left to subsidize short hauls.[38] Moreover, in recent years the CAB has generally allowed airlines to abandon unprofitable routes.[39] Truckers are free to offer a wide range of service to communities they serve and can effectively ignore local service that is unprofitable.[40] At any rate, abandonment cases like those common on the railroads are rare in trucking. They would be common if the local service involved was truly unprofitable, and required cross-subsidization out of profits on other routes.

Unquestionably the telephone industry internally subsidizes long distance service for small communities. Interstate long distance charges are uniform for calls of a given distance regardless of the amount of traffic on the connecting line. Since unit costs drop dramatically as traffic increases, this means that the industry discriminates in favor of low traffic routes. In recent years, the appearance of competing microwave systems on the high density routes has forced A.T. & T. to lower rates for private line service on those routes, but the internal subsidy still exists in the case of individual long distance calls. The issue here is not whether small communities will receive service at all, but whether they should pay the high price for service that the high costs of low density routes might dictate.

3. Regulation to allow cross subsidization and prevent cream skimming

Cross subsidization has played an important role in both inter-industry competition and provision of service to small communities. Cross subsidization occurs when a firm charges high rates (relative to costs)

[37] Public Law 94-210, Railroad Revitalization and Regulatory Reform Act of 1976, section 803.

[38] George W. Douglass and James C. Miller III, "Regulation of Domestic Air Transport," Brookings, 1974, p. 97.

[39] Subcommittee on Administrative Practices and Procedures, Senate Judiciary, "Civil Aeronautics Board Practices and Procedures," 1975, p. 64.

[40] See M. J. Peck and J. C. Nelson in "The Economic Case for De-Regulating Trucking," Business Week, Nov. 2, 1975, pp. 86-7.

on some part of its service and uses the profits earned there to help cover costs of service elsewhere. A classic example was the railroads' high rates on high value freight, an alleged purpose of which was to permit low freight rates on agricultural products and other raw materials hauled from the sparsely populated areas of the country. Similarly, the telephone, trucking, and airlines industries claim that they use profits on well-traveled routes to subsidize service to small communities.

Where cross subsidization occurs for whatever reason, it provides an incentive for "cream skimming". That is, outsiders will be attracted to the profitable service leaving the unprofitable business to the regulated firm. For instance, initially the unregulated trucking industry took over the hauling of high value manufactured products leaving the low value bulk commodities as the main remaining business of the railroads. They were able to do so because of higher quality service and ICC pegged rates equal to rail tariffs. The new microwave private line companies have entered the high density routes and ignored the less profitable low density routes. This could reduce the funds of profits out of which other routes are subsidized.

The fear of cream skimming gives rise to demands by the affected firms that Federal regulation prevent outsiders from taking over their most profitable business. Cross subsidization therefore almost automatically leads to regulatory restraints on competition; and this restraint can foster an environment in which inefficiency fluorishes.

There is in fact a strong case for cream skimming—for entry into the profitable segments. It eliminates monopolistic pockets where firms are able to charge prices that are high relative to avoidable costs. If the cream skimmer has lower costs, then cream skimming can result in the use of more efficient techniques by regulated firms.[41] In achieving the objective of assuring service to small communities, it would seem better to subsidize the unprofitable service directly rather than to maintain conditions that permit the regulated firm to exploit monopoly on some service, and thereby impose unprofitable service on the firm as part of the package. It is open to question why people in one market should pay more than the cost of service so that others can have cheap service.[42] The public must decide whether the subsidized service is worth the costs in the form of high monopoly rates elsewhere. Unfortunately, the connection between cheap service in one area and high monopoly rates in another is seldom made by the consuming public. The costs in terms of economic inefficiency and the continuation of regulation itself can be very high. As with all subsidies, the result can be the provision of service beyond the level (or at higher quality than) than those for which consumers would be willing to bear the costs. Some clear purpose, such as internalizing a significant external effect should, in a review of such subsidies, be required to justify initiation or continuation.

4. Promotion of key industries

In some cases regulation has been advanced in order to promote certain industries. The promotion of air transportation was one of the

[41] It is possible that the cream-skimmer would have higher *costs* than the incumbent, yet charge a lower price. In such cases, though consumers would benefit, the total cost of providing service might rise.

[42] For a further discussion of cream skimming see Alfred E. Kahn, "The Economics of Regulation," Volume 11, 1971, pp. 220–250.

functions expressly assigned to the Civil Aeronautics Board when it was established. The Atomic Energy Commission also had as a primary function the promotion of nuclear energy. When it was replaced by the Nuclear Regulatory Commission and the Energy Research and Development Administration, the regulatory and promotion functions were separated. To cite another example, the FEA not only regulated oil prices, but also attempted to promote the development of domestic sources of oil. For many years the Federal Maritime Board and its predecessors had the dual function of regulating shipping rates and promoting the U.S.-flag merchant marine. Since reorganization in 1961, the promotional function has been assigned to the Maritime Administration leaving only the regulatory function to the Federal Maritime Commission.

In many of these cases, national security was offered as a justification for promotional activities. The connection between civil aviation and defense seems remote today, though it was perhaps plausible in the 1930's when the CAB was established. The interest of the defense establishment in an American flag merchant fleet continues to be substantial,[43] but the maritime subsidy program seems to have a life of its own beyond the defense aspects of the program. The weakened international position of the United States due to its increasing dependence on foreign oil was clearly revealed in the 1973 embargo, and the policy of promoting domestic sources that has developed as a result of that experience clearly has a substantial defense content.

The record of promoting certain industries through regulation has been mixed. To the extent that promotion was factored into ratemaking, it probably meant that rates were increased to make the industries involved profitable. This necessarily implied a potential conflict between the goals of promotion and the objective of low consumer prices.

Promotion has sometimes taken the form of subsidies, and subsidy programs can necessitate regulation. For its first two decades the CAB was regulating subsidized air carriers and one of its major concerns was to limit the obligations of the Federal Government while supervising the creation of strong airlines that could ultimately operate without the subsidies.[44] A policy of preventing new entry and of limiting carrier routes served not only to reduce the Government's subsidy obligation at that time, but also limited the prospects for competition.

5. Regulation to govern the distribution of windfall profits or unearned income

In some cases, regulation has arisen simply because important groups in society would face high prices without it. The Federal Power Commission's regulation of the field price of natural gas originated from consuming state complaints about rising gas prices. The Supreme Court's ruling that the FPC had an obligation to regulate gas prices[45] resulted from a lawsuit initiated by consuming states. Also the failure of Congress to pass legislation eliminating that control is clearly due in large part to pressure from consuming states. Without regulation

[43] Samuel A. Lawrence, "U.S. Merchant Shipping Policies and Politics," Brookings Institution, 1966, pp. 105–117.
[44] Richard E. Caves, "Air Transport and Its Regulators," Harvard 1962, pp. 267–269.
[45] Phillips Petroleum Co. v. Wisconsin, 347 US 672 (1954).

gas production would be generally competitively organized,[46] but there is little question that higher prices would yield large economic rents or unearned income to many gas producers who now produce at lower prices. Although low gas prices have led to shortages, the present shortage is not necessarily a case for regulation. In a well organized unregulated market, shortages will lead to higher prices which will serve to induce more output, ration the scarce commodity among users, and discourage consumption.

The origins of oil price controls are somewhat different, but their continuation today reflects similar pressures. The quadrupling of world oil prices in 1973–74 occurred during a period when general price controls were in force. Prices of "old oil" (oil produced from properties already in operation in 1972 in quantities no greater than 1972) were frozen at about $5 per barrel, but the prices of imports and "new oil" (oil produced from new properties or in excess of 1972 levels from old properties) were allowed to rise to the much higher levels. When general price controls were abandoned, those on oil were retained to prevent the large price increase that was bound to follow. The oil price system was revised in 1975 so that there are now three tiers of oil prices instead of two. The multiple tier price system made elaborate further regulation almost inevitable, because without it refiners would have had wildly different costs. To roughly equalize their costs, the Federal Energy Agency instituted a system of "entitlements". These are ration tickets, granting the right to process cheap oil, which are issued to refiners roughly in proportion to their total oil consumption. Firms with large amounts of cheap oil must buy entitlements from those with little of it, and these purchases roughly equalize refiners' crude oil costs. In addition, the agency has maintained an elaborate set of allocations that tie refiners to retailers and control their resale prices. The low oil prices have not led to shortages because plenty of foreign oil has been available, but they have resulted in more oil consumption and more dependence on imports than would have occurred without controls. Moreover, that action has placed the domestic oil industry under an enormously complex set of regulations.[47]

6. Regulation to control price discrimination

A major concern of Congress in establishing economic regulation has been avoidance of price discrimination. This can have various meanings, but in economics price discrimination occurs when a producer sells to different customers at different margins over cost.[48] It does not necessarily mean different prices. If price is uniform but it costs less to serve one group than another, then there is discrimination against the group that is cheap to serve. One of the main complaints that brought about the establishment of the ICC was over rate discrimination in favor of large shippers and of cities served by competitive routes. A common provision in the mandate establishing regulatory agencies has also been that they prevent "undue discrimination". In fact, however, in many instances, large customers are the bene-

[46] Ronald Brauetigam, "An Examination of the Regulation of Natural Gas" in appendix to this volume.

[47] David Montgomery, "A Case Study of Regulatory Programs of the Federal Energy Administration" in appendix to this volume.

[48] The relevant cost is long run marginal or avoidable cost—the cost of expanding service by one unit.

ficiaries. Even with regulation, they are commonly the customers who could supply themselves or relocate in service areas with more favorable rates. It is just such customers to whom a monopoly would offer lower rates.[49] It is not uncommon to find special rate schedules for very large customers which are essentially negotiated rates generally rubber stamped by the regulatory commission involved. This is particularly common in electric power, but it also occurs in the case of unit trains on the railroads.

7. Preserving property rights in regulation [50]

A frequently-asserted reason for continuing regulation is that an industry has been regulated in the past and that losses would be incurred if regulation were to end. Regardless of the original justification, regulation develops a life of its own once in force because of unfortunate economic consequences should it be ended. For example broadcasting licenses that were issued at nominal fees have acquired high values. Many such licenses have been sold at prices that reflect those values and current owners are reaping only normal returns. To sell them to the highest bidder now would in effect result in the confiscation of valuable assets and, practically speaking, is therefore almost impossible. Similarly, allowance of unlimited importation of signals by cable television firms would reduce license values, and is consequently difficult to accomplish. Once again, common carrier truckers have received valuable operating authorities from the ICC. These have often been purchased from other truckers at high prices. Those who bought such authorities are perhaps earning only a normal return on their investments. An end to truck regulation now would eliminate the value of those authorities and impose large losses, perhaps even bankrupting those who own operating authorities.

Similar pressures for the continuation of regulation occur even when the advantages from regulation are not bought and sold. The airlines have valuable property in their routes even though they can't sell it. Thus airline deregulation was opposed by a significant portion of the industry as well as by labor union interests. And consumers with access to cheap gas resist deregulation because that would mean the loss of that special advantage.

It is difficult for the Government to rescind a special privilege once granted to some group in society, but it is not impossible. The Securities and Exchange Commission succeeded in ending fixed brokerage fee schedules in 1975, even though it resulted in a large drop of the value of a seat on the stock exchange.[51] Such events have been rare, however. In many cases regulation continues because it has existed in the past and its elimination might injure regulated interests.

C. The Effects of Changing Circumstances on the Need for Regulation

Very often, the conditions within the regulated industries that justified control have changed, thus bringing into question the continuing

[49] That is, these customers have relatively more elastic demands and so would benefit from lower prices.

[50] This section presents the argument of Gordon Tullock, "The Transitional Gains Trap" Bell Journal, Autumn, 1975 pp. 671–678.

[51] Hans Stoll, "Regulation of Securities Markets: An Examination of the Effect of Increased Competition," in appendix to this volume. One possible explanation may be the substantial institutional investor interest in very low negotiated rates on large transactions.

need for regulation. Thus regulation continues long after the conditions that called for regulation have changed.

For example, when the ICC was first established in 1887, railroads were monopolies for thousands of small communities. The trunk routes between the large cities were tight oligopolies (though often in competition with water carriers). On those trunk routes, railroad interests often colluded in setting rates though that collusion regularly broke down in rate wars that were pictured as destructive competition. Rate discrimination was rampant. Rates were often lower between large cities where competition existed than on shorter routes to smaller communities where it did not. Similarly, railroads allowed lower rates in the form of rebates to large firms like Standard Oil than to their smaller rivals.[52]

Under these conditions regulatory controls became a popular alternative to the unregulated market. It had the support of the rural and small town population which was then a majority, of the smaller rivals of large firms that received discriminatory rebates, and those railroad interests which desired an end to rate wars.[53] The Act to Regulate Commerce that set up the ICC in 1887 required that rates be "fair and reasonable," and that they be published and adhered to. It forbade pooling (a common form of railroad collusion at that time), prohibited rebates or other discrimination, and prohibited long haul rates lower than those for shorter hauls on the same line.[54] The Act was clearly aimed at collusion, rate wars, and discrimination, the major complaints of the day. Subsequent court decisions greatly weakened those policies, and regulation did not really become effective until major amendments to the act were adopted in 1903, 1906, and 1910. But there can be little question about the conditions which the original act was intended to remedy.

Those conditions have changed dramatically since 1887. Most important, the monopoly position of the railroads has been largely eliminated by the emergence of new freight industries. Virtually all the products hauled by railroads are now also moved by pipelines, barges, or trucks as well. Because of this competition, the railroads are not capable of earning exceptional returns on most commodities over the vast majority of routes. Their average rate of return in 1974, a relatively good year, was only 4.3 percent,[55] a return so low that it amounts to negative profits if inflation is taken into account. An unregulated rail industry would almost certainly not be able to set exploitative rates and survive for any length of time.

For the same reason, the possibility of rate discrimination is also far less likely today than it was in the 1880's. In an unregulated transportation industry, a railroad that tried to charge high rates to a particular community or shipper would soon see much if not all of the affected traffic shift to competitive trucks or barges. Rail rate differences were once a matter of strong complaint on the part of small shippers, small communities and whole regions. Today they just are not that important because of alternative modes of transportation.

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[52] This description is based on Gabriel Kolko, "Railroads and Regulations," 1877–1916 Princeton University Press, 1965, chs. 1 and 2, and Clair Wilcox, "Public Policies Toward Business," 4th edition, Irwin, 1971, pp. 369–370.

[53] Kolko, op. cit., ch. 2.

[54] Wilcox, op. cit., pp. 371–72.

[55] Return on equity. Citybank, "Monthly Economic Letter," April 1976, p. 7.

Collusion among railroads also would not be a serious problem because of the extreme competition from other transportation modes. Moreover, if deregulation carried with it the repeal of the Reed-Bulwinkle Act,[56] as one would expect, then collusion would be clearly illegal. At the time that the original ICC Act was adopted, there were no major antitrust statute and the protection that we now have against conspiracy did not exist.

As mentioned elsewhere, short of a major depression, destructive competition is not likely to be a problem in trucking. It is, however, a possibility for the railroads in those parts of the country where competing rail lines still exist, especially because of excess capacity due to regulatory limitations on abandonments. However, there is a good chance that destructive competition can be avoided. In 1887 oligopoly was new. We now have extensive experience with it. Concentrated manufacturing industries such as steel and automobiles have generally been able to avoid destructive price wars, so perhaps the railroads can, too. Nevertheless, if we move toward a more competitive freight industry, it would probably be wise to do so gradually, permitting rates to vary within an increasing zone of reasonableness. If destructive competition should develop in the railroad industry, it may be appropriate to permit more mergers among competing railroads. Even regional monopoly railroads would not have much monopoly power because of the intense competition they must face from other modes.

ICC regulation of trucking was introduced in 1935 for two main reasons: To control the erosion of rail shipments and to control the allegedly destructive competition that the industry had suffered during the previous 5 years. Both objectives were probably misguided at the time, and almost certainly are irrelevant today.

The Motor Carrier Act of 1935 established classes of contract carriers which hauled freight under a limited number of contracts and common carriers which stood ready to haul freight for all comers. Contract carriers are required to file contracts with the ICC, for which the agency can set minimum rates. Common carriers are subject to entry controls and to rate regulation similar to that of the railroads. They must have certificates of public convenience and necessity, specifying the routes and commodities to be hauled, and they must publish their rates and adhere to them.[57]

The hope that truck regulation would limit the diversion of freight from the railroads turned out to be unfounded. Truck rates were set equal to rail rates for the same commodities, but since trucks are faster and have fewer damages, shippers tended to shift to trucks. Rail rates substantially lower than truck rates are required for railroads to retain the business of a particular industry. In general, the trucks took over the high value, high freight rate business, leaving the railroads with the low rate bulk products.

As described elsewhere, the trucking industry is an unlikely place to find destructive competition. In the early 1930's, however, many drivers facing unemployment otherwise, acquired second-hand trucks and offered to haul freight at very low rates so long as they covered

[56] 62 Stat. 72; This act exempts railroad and truck rate bureaus from the antitrust laws if their rules, regulations, and procedures are approved by the ICC. Its repeal would not make rate bureaus illegal per se. The through and joint rates that the carriers negotiate would presumably be legal.

[57] Clair Wilcox, "Public Policies Toward Business" Irwin 1971, p. 394.

out-of-the-pocket costs and yielded something for the driver. The best solution to that problem probably would have been a general policy of maintaining full employment. However, the solution chosen in trucking, as in so many lines of business in the 1930's, was to restrict competition. The NRA, the Agricultural Marketing Acts, and fair trade are other areas where a policy of competition was shown to be in disfavor after several years of severely depressed conditions.

Whatever market conditions existed in the 1930's, there is no prospect of destructive competition today. The unregulated section of the trucking industry that carries agricultural products has not experienced anything approaching it although entry is free and prices are uncontrolled. Even in the regulated sector, a large part of the traffic is in fact carried by owner-operators who are under lease to common carriers and who compete actively themselves for that business.[58]

In general, the conditions that were the justification for the Motor Carrier Act of 1935 are no more appropriate bases for regulation today than the 1887 conditions are for existing rail regulation.

Railroads and trucks are, of course, but two examples of how changed circumstances can and do effect the need for regulation. To one extent or another, similar situations can be found in other areas of regulatory controls. The point is that periodic reappraisal is essential to determine whether the original reasons for Federal intervention have continued vitality. Otherwise regulation tends to develop a life of its own, all too often to the benefit of those who are subject to such controls.

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[58] Daryl Wyckoff and David Maister "The Owner-Operator: Independent Trucker," D. C. Health, 1975, passium.

Chapter Three

THE ECONOMIC IMPACT OF REGULATION

From the outset, consideration of the economic impact of Federal controls should recognize that important distinctions exist between the two major forms of regulation. These differences, which are noted elsewhere in this volume, merit emphasis in this discussion as well.

First, there is economic regulation which is concerned with prices, entry, and rates of return. In those matters, Congress established agencies to regulate particular industries or specific kinds of business practices. The Civil Aeronautics Board and the Interstate Commerce Commission are examples of that type of regulation. A second form of Federal regulation has as its primary concerns a broad range of social objectives, such as health, safety and environmental protection. Examples of the second category include the Environmental Protection Agency, National Highway Traffic Safety Administration and the Consumer Product Safey Commission.

Important differences exist between the two forms of regulation. Perhaps most significant, agencies like EPA and NHTSA are directly concerned with questions of life, death, and survival. On the other hand, economic regulation addresses the problems of monopoly, discrimination, possible unfair business practices, and denials of service. More often than not, economic regulation was imposed to shield a particular industry from competition and from the effects of an unfettered market. Elimination of controls in those areas allows competitive pressures to operate, sometimes without serious adverse economic effects. However the lifting of controls in the health, safety and environmental fields typically could not result in similar benefits. For example, the environment has historically been used by the private sector as if it were a free resource, when in fact it is both scarce and exhaustible. Absent some form of regulation, there would be no business incentive to absorb the costs of abatement and conservation, since the costs of pollution usually fall elsewhere than on the polluter.

The distinction is important in the context of economic impact evaluation. At present much of what is known in that regard has been provided by the regulated industries. Industry studies, which have appeared with increasing frequency in the past several years, typically provide little analysis of the benefits of regulatory controls, and instead focus on the burdens imposed. Moreover such studies tend to center on those regulatory costs which provide no direct corporate benefits. Yet a significant portion of Federal economic regulation directly benefits the private sector, by restricting competition and other methods. Those clearly advantageous regulatory activities typically are not the subject of business-prepared cost studies. For example, it is noteworthy that the trucking industry, which generally views itself

as a beneficiary of Federal controls, has prepared no cost studies on the expense of that regulation.

Yet available estimates indicate that the total cost of ICC trucking regulation is very high. It is variously estimated that those regulatory controls cost the U.S. economy between $1.4 and $2.9 billion annually.[1] The prime beneficiary is the regulated industry itself, since ICC controls restrict competition by limiting entry into the field. Thus, regulation supports the commercial value of ICC operating certificates, most of which date to the 1930s when controls were first established. Today those certificates are valuable licenses. This regulation, however, does not benefit the consumer, who pays higher rates for interstate trucking than would otherwise exist in the absence of controls.

The recent success of airline deregulation suggests what might be expected by an end to trucking controls. Like trucking, Civil Aeronautics Board regulation of airlines often meant restrained or lessened competition. In airlines, Federal regulation shielded the industry from competition, with the result that airline fares were much higher than necessary. Again, the industry appeared to benefit, but the consumer did not. In early 1977, the General Accounting Office estimated that airline deregulation would save consumers between $1.4 to $1.8 billion annually.[2]

We now know that relaxation of Federal controls on airlines has positively benefited both the industry and the consumer. Today the Nation's airline business is in much better financial condition than prior to that action. The procompetition approach has produced lower fares and varied service, which in turn has attracted more passengers and generated more jobs for the industry. Published reports indicate that every carrier has experienced increased operating revenues, ranging from 10 percent to 30 percent higher for the first 6 months of 1978 as compared to the same period in 1977. Operating profits have similarly increased.[3] Under the Airline Deregulation Act of 1978, which was recently signed into law by the President, the CAB's powers must in the future be used to foster and encourage, rather than restrict, competition between air carriers. The agency's powers are scheduled to lapse in 1983, and the CAB itself will go out of existence by 1985.

In that area, economic regulatory controls will be entirely lifted. But it merits emphasis that the Federal Government will continue its important role in insuring the safe and efficient day-to-day operation of our national system of aviation. While the CAB will pass into history, no one has suggested the abolition of the Federal Aviation Administration, the Federal agency charged with aviation safety.

Thus airline deregulation recognized the distinction between Federal controls over rate and entry, and those which insure public safety.

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[1] See W. Bruce Allen and Edward B. Hymson, "The Costs and Benefits of Surface Transportation; Another View," in MacAvoy and Snow, *Regulation of Entry and Pricing in Truck Transportation*, American Enterprise Institute (1977); Thomas Gale Moore, in Phillips, Promoting Competition in Regulated Markets, Brookings (1975); and James C. Miller III, in "Special Discussant's Comments," provided by the Antitrust and Monopoly Subcommittee, Committee on the Judiciary, U.S. Senate.

[2] See Comptroller General, "Lower Airline Costs Per Passenger Are Possible in the United States and Could Result in Lower Fares," CED–77–34, February 18, 1977.

[3] See Teresa M. Ellis, CRS Memoranda on financial status of the airline industry, May 11, 1978 and September 28, 1978. Library of Congress, Congressional Research Service.

In the latter area, it is important to recall, Congress in establishing those programs made a basic judgment on the need and justification for that legislation. For example, as CPSC Commissioner R. David Pittle has recently observed, Congress was confronted with compelling evidence that effective Federal action was required in the area of product safety, when the Consumer Product Safety Commission was established in 1973. Statistics compiled by the National Commission on Product Safety illustrate the extent of the problem:

(A) During an average 24-hour period, three Americans are killed using 1 of 10,000 household consumer products.

(B) During the same 24-hour period, more than 3,000 product-related injuries occur which restrict the activities of about half of the victims and force a third of them to take to bed to recover.

(C) The total number of Americans injured each year by consumer products is at least 20 million. Of the total, 110,000 are permanently disabled and 30,000 are killed at an annual cost to the Nation of more than $5.5 billion.[4]

Many other health, safety and environmental initiatives at the Federal level were established upon similar showings of need for national action on those pressing public concerns. In volume V of our study we have reviewed the background of those efforts.[5]

This chapter will focus on the known information of the economic impact of Federal regulation. At present, it is not possible to speak with precision about either the total costs of regulation, or even the expense of many specific programs. There is not, as this discussion will show, sufficient information to make a considered judgment on whether costs are excessive in relationship to the benefits of those activities. But certainly there are benefits from those efforts, particularly in the health, safety and environmental areas.

Many of the protections instituted by these programs have been so successful that the security they provide is taken for granted: pasteurization, meat and poultry inspection, control of patent medicines are among the classical examples of success. Also, we rarely acknowledge the excellent Federal performance in such areas as aviation safety or drug testing requirements or highway safety. CPSC Commissioner Pittle has recently outlined some of the benefits from those and similar programs which include: a 40-percent reduction in ingestions of poisons by children over a 4-year period, due to safety packaging requirements; a decrease of 45 percent in the number of crib deaths, since the safety standards for cribs became effective in 1974; the saving of some 28,000 lives between 1966 and 1974 as well as a substantial reduction in serious injuries, because of Federal motor vehicle safety regulations; and what appears to be a complete elimination of flame-burn injuries involved in children's sleepwear, as a result of Government standards for that clothing.[6]

Those accomplishments are of real value, a fact that is not diminished by an inability to reduce them into statistics in a "cost-benefit"

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[4] Cited in R. David Pittle, "Ensuring Consumer Safety—Is There a Cheaper Way?", before the Sixth National Consumer Symposium, Dec. 12, 1978.

[5] *See*, Study on Federal Regulation, vol. V, pp. 308–317.

[6] Pittle, *loc. cit.*

equation. Thus, public discussion of the need for careful appraisal of the projected impact of proposed regulations should not lose sight of the major advantages and compelling need for effective health, safety and environmental protection. With that said, it is also clear that the means used to achieve statutory goals, whether in economic or social regulation, should be the most efficient and least costly available. However, that objective, in our opinion, can be obtained without gutting health and safety programs that the public wants and needs.

A. Direct Costs of Regulation: Federal Budgetary Expenditures, Private Sector Costs of Dealing With Regulatory Agencies, and Direct Compliance Costs

1. Budgetary expenditures of Federal regulatory agencies

First, the direct costs of regulation are the costs of the regulatory agencies and the private costs of dealing with these agencies. Table 3–1 shows the fiscal 1978 expenditures of the major Federal regulatory agencies. Subsidies, transfers to States, research, and training expenditures have been excluded where possible. Regulatory activities of agencies whose main functions are nonregulatory such as the Forest Service, the Army Corps of Engineers, the Social Security Administration, the Bureau of Land Management and Reclamation, the Coast Guard, and the Federal Highway Administration are excluded. Altogether, the regulatory expenditures of the Federal Government are on the order of $2.7 billion.[7]

[7] The Equal Employment Opportunity Commission and the National Labor Relations Board are excluded from table 4–1 because they do not directly regulate economic activity. If they were included the total would be close to 3 billion.

TABLE 3–1.—*Fiscal 1978 budget authority of Federal regulation agencies* [1]

	Millions
Civil Aeronautics Board (excludes $74,200,000 subsidies)	$24.6
Commodity Futures Trading Commission	13.8
Consumer Product Safety Commission	40.6
Federal Communications Commission	64.5
Federal Home Loan Bank Board (excludes loans to Federal home loan banks)	[2] 52.3
Federal Power Commission (1977)	43.2
Federal Maritime Commission	9.9
Federal Trade Commission (consumer protection only. Total budget authority, $62.2)	27.4
Interstate Commerce Commission	59.7
National Transportation Safety Board	15.4
Nuclear Regulatory Commission (excludes research)	141.4
Occupational Safety and Health Review Commission	7.2
Renegotiation Board	6.3
Securities and Exchange Commission	61.1
Department of Agriculture, Animal and Plant Health Inspection Service (meat and poultry inspection only)	206.5
Department of Health, Education, and Welfare: Food and Drug Administration	288.7
Department of Labor:	
Employment Standards Administration	117.9
Occupational Safety and Health Administration	136.6
Mine Safety and Health Administration (1978)	99.3
Department of Transportation:	
Federal Aviation Administration (administration of flight standards program only)	203.7
Federal Railroad Administration (Railroad safety only—excludes Amtrak and bankrupt railroads)	7.3
National Highway Traffic Safety Administration (excludes research and State contracts)	54.6
Department of the Treasury:	
Bureau of Alcohol, Tobacco, and Firearms (regulation only, excludes enforcement)	47.9
Office of the Comptroller of the Currency	92.6
Environmental Protection Agency (excluding grants and research)	643.5
Federal Energy Administration (1977)	154.7
Self financing agencies:	
Board of Governors, Federal Reserve Systems (supervision and regulation of financial institutions only)	8.5
Federal Deposit Insurance Corporation (administration and operating expenses only, not losses due to insurance)	92.4
National Credit Union Administration	18.7
Total	2,740.3

[1] Source: The Budget of the United States, 1979, appendix.

[2] Total program costs.

The budgets of the regulatory agencies are but a fraction of the whole Federal budget (which, according to OMB estimates, is $453.5 billion for 1978) although it is high compared with the $80 million [3] spent by the Antitrust Division of the Justice Department and the Federal Trade Commission on antitrust activities covering a much broader area than the lines of business covered by the traditional economic regulatory agencies. This is to be expected because most regulatory agency action involves many aspects of the regulated industries, while the antitrust authorities attempt to maintain competition

[3] Budget of the United States, 1976. Appendix. Figure includes entire budget authority of the Antitrust Division and the portion of the FTC budget assigned to "maintaining competition."

through selective cases, leaving the market to do much of its own regulating. The agencies that regulate with respect to environmental, safety and health effects have larger budgets than the traditional economic regulatory agencies, partly because of their broader scope but also because of their large-scale inspection and enforcement responsibilities.

2. Private sector costs of dealing with regulatory agencies

The direct private costs of regulation are probably as high or higher. Table 3–2 shows the estimated man-hours expended in meeting just the reporting requirements of most of the Federal regulatory agencies. These estimates were prepared by the agencies involved, and compiled by GAO and OMB. The statistics suggest reporting costs to private industry of about $850 million a year.[9] The total is dominated by two FCC forms—radio and television station "daily programs, operational, and maintenance logs"—which account for 40,184,670 hours or 52 percent of the total. It seems likely that much of that reporting would occur without regulation. The remaining reporting burden excluding these two forms would suggest an annual reporting cost of about $279 million.

TABLE 3–2.—*Estimated man-hours required by reporting requirements of regulatory agencies for year ending June 1976*

	Estimated man-hours, fiscal 1976
Independent regulatory agencies:	
Civil Aeronautic Board	283,780
Commodity Futures Trading Commission	62,990
Consumer Product Safety Commission	40,710
Federal Communications Commission	48,076,930
Federal Maritime Commission	69,500
Federal Power Commission	1,987,800
Federal Trade Commission	742,050
Interstate Commerce Commission	2,670,790
Nuclear Regulatory Commission	4,918,480
Securities and Exchange Commission	45,120
Administrations, departments and agencies:	
Department of Transportation:	
Federal Aviation Administration	3,065,138
Federal Railroad Administration	238,609
National Highway Traffic Safety Administration	204,911
Department of Agriculture:	
Animal and Plant Health Inspection Service	1,468,565
Packers and Stockyards Administration	25,863
Department of Commerce: Maritime Administration	146,692
Department of Interior: Mining Enforcement Administration	192,460
Department of Labor:	
Employment Standards Administration	1,658,491
Occupational Safety and Health Administration	192,460
Department of Health, Education, and Welfare: Food and Drug Administration	861,015
Environmental Protection Agency	596,839
Federal Energy Administration	7,845,900
Total	75,395,093

Source: Special tabulation by the General Accounting Office for the Independent Regulatory Agencies and FEA and special tabulation by Office of Management and Budget for administrative departments and agencies except FEA.

[9] Assuming an average yearly compensation of $15,000 and an average work year of 2,000 hours.

No reliable information is presently available on private litigation costs associated with Federal regulation, but they are probably large. In the case of the Federal Power Commission during the 1960's, it has been estimated that the FPC's own legal costs totaled $10.6 million per year while private costs related to litigation concerning that agency came to $24 million per year.[10] In that instance, costs to private industry exceeded those incurred by the agency. Similar costs probably are improved and incurred by other regulatory agencies who—like the FPC—are principally involved in licensing and rate matters. In the more recently established environmental, safety and health agencies, however, a large part of agency costs involve inspection and enforcement where corresponding direct business costs would ordinarily be smaller. Perhaps a reasonable guess is that total private litigation costs related to Federal regulation, in general, are at least of the same order of magnitude as the agencies' own budgets.

3. Direct private sector costs of complying with regulatory requirements

The largest private costs of regulation are undoubtedly incurred in industry compliance with regulatory controls. As with other cost estimates in this area, the reliability of the available information—often furnished by the regulated interests without consideration of off-setting benefits—is open to question, and needs to be approached with caution. All too often, industry-supplied figures reflect antiregulatory bias in the business community. All the same, the cost information, which industry is providing with increasing frequency, is startling.

Presently the Business Roundtable is engaged in such an effort. That study, which does not address the question of benefits, will analyze costs incurred by member companies to comply with the regulations of several Federal agencies. The findings of that year-long study will be available in early 1979. Some individual companies have also recently reported cost analyses. For example, in July 1978, Caterpillar Tractor disclosed that, according to its own study, the company spent over $67 million in regulatory compliance costs in a single year, 90 percent of which was imposed by two Federal agencies (EPA and OSHA) that did not exist prior to 1970.[11] In April 1976 testimony before a subcommittee of the Joint Economic Committee, Dow Chemical reported on what it termed an "extremely conservative" estimation of its compliance costs with Federal regulations. Dow's analysis found costs of $147 million in 1975; figures for 1976 showed a cost increase of 27 percent, for a total of $186 million, about a third of which was viewed as unnecessary.[12]

"The cost of excessive regulation is a tax levied on every citizen in this nation." In a more comprehensive vein, the annual McGraw-Hill survey of business reportedly estimated that the private sector spent $3.2 billion in 1976 to comply with the rules of Occupational Safety and Health Administration alone.[13]

Small business also feels the impact. As Senator Tower recently observed—

> The smaller business is hit disproportionately hard by paperwork, as well as well as other types of Government regulation, because the proprietor usually

[10] Stephen Breyer and Paul MacAvoy, "Energy Regulation by the Federal Power Commission," Brookings, 1974, p. 14.
[11] Congressional Record, July 26, 1978, pp. S. 11883–4.
[12] Testimony, Paul Oreffice, President, Dow Chemical USA, April 11, 1978, before Subcommittee on Economic Growth and Stabilization, Joint Economic Committee, U.S. Congress.
[13] New York Times, June 18, 1978, p. 4E.

has to do it himself and does not have expensive attorneys and accountants to assist in compliance.[14]

Clearly there is concern over the regulatory impact on small business, as evidenced for example by the recent Senate passage of an amendment to exempt from OSHA coverage those small businesses which employ 10 or less workers. In August 1978, in introducing that proposal, Senator Bartlett indicated:

> Mr. President, the current pace of inflation makes it increasingly difficult for small businesses to compete effectively in the marketplace. Excessive government regulation exacerbates their problems . . . My intention here is only to provide relief to those small businesses which are burdened most by the plethora of OSHA regulations. . . .[15]

Others agreed, and a motion to table the proposal was defeated 42–51.[16] Thereafter the amendment was carried. In this area, as with the larger regulated companies, no precise and reliable information is available on any extensive scale. However, there are indications. For example, the president of Park Sausage, a small Baltimore company, testified before Congress that his company spent about $96,000 to comply with regulations in order to raise just $400,000 in new equity capital.[17]

Business statistics, as previously noted, typically provide little analysis of the benefits of regulatory controls, and instead focus on the burdens imposed. And even in that regard, it is noteworthy that private sector studies tend to center on costs imposed by those regulations which provide no direct corporate benefits. A significant portion of Federal regulation directly benefits the private sector, by restricting competition and other methods. Those clearly advantageous regulatory activities typically are not the subject of business-prepared cost studies. For example, it is significant that the trucking industry, which generally views itself as a beneficiary of ICC controls, has prepared no cost studies on the social costs of that regulation. It is clear, as will be further discussed later, that information on cost provided by business interests needs to be approached with some caution, since natural biases accompany such estimates.

a. Costs and benefits of pollution control

The most complete available estimates of these costs are in the area of environmental controls, where the Council on Environmental Quality—CEQ—makes annual estimates of pollution control expenditures. CEQ determines those estimates on an incremental basis—that is, the level of expenditures that would not have been made without the EPA pollution control programs. Such incremental expenditures came to $9 billion for air pollution, $4.7 billion for water pollution, and $0.7 billion for solid waste in 1975. The CEQ estimates that by 1984 annual incremental costs will be $18.6 billion for air, $19.5 billion for water, $1.3 billion for solid waste and $0.6 billion for land reclamation.[18]

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[14] Congressional Record, July 13, 1978, p. S 10691.

[15] Ibid., August 2, 1978, p. S 12325 (amendment to H.R. 11445). The provision was not, however, adopted into law in the 95th Congress.

[16] Ibid., p. S 12332.

[17] Testimony, Raymond v. Haysbert, President, Park Sausage, April 11, 1978, before Subcommittee on Economic Growth and Stabilization, Joint Economic Committee, U.S. Congress.

[18] Council on Environmental Quality "Environmental Quality, The Seventh Annual Report of the Council on Environmental Quality," 1976, p. 145. These are total annual costs including operating and maintenance expenses and interest and depreciation on investments required by the environmental programs.

TABLE 3–3. COMPARISON OF NATIONAL POLLUTION DAMAGE ESTIMATES

Media: Study	Base year	Range, in billions of dollars	Estimates, in 1975 dollars
Air: Ridker (1966)	1970	7.3 to 8.9	10.1 to 12.3.
Air: Gerhardt (1969)	1968	6 to 15.2 (best 8.1)	9.2 to 23.3 (best 12.4).
Air: Barret and Waddell (1973)	1968	16.1	24.6.
Air: Babcock and Nagda (1773)	1968	20.2	30.9.
Air: Justice, Williams, and Clement (1973)	1970	2 to 8.7	2.8 to 12.
Air: Waddell (1974)	1970	6.1 to 18.5 (best 12.3)	8.4 to 25.6 (best 17).
Air: National Academy of Sciences (1974)	1973	15 to 30 (best 20)	17.9 to 35.8 (best 23.9).
Air: Heintz and Hershaft (1975)	1973	9.5 to 35.4 (best 20.2)	11.3 to 42.2 (best 24).
Water: Abel, Tihansky, and Walsh (1975)	1970	5.5 to 15.5 (best 10.6)	7.6 to 21.4 (best 14.7).
Water: Horak and Heintz (1975)	1973	4.5 to 18.6 (best 10.1)	5.4 to 22.2 (best 12).

Sources: R. G. Ridker, "The Problem of Estimating Total Cost of Air Pollution: A Discussion and an Illustration," report to the U.S. Public Health Service, Washington, D.C., July 1966; P. H. Gerhardt, "An Approach to Estimation of Economic Losses due to Air Pollution," National Air Pollution Control Administration (mimeo, June 1969); L. B. Barett and T. E. Waddell, "The Cost of Air Pollution Damages: A Status Report," AP–85 (Environmental Protection Agency, February 1973); L. R. Babcock, Jr., and N. L. Nagda, "Cost Effectiveness of Emission Control," Journal of the Air Pollution Control Association (March 1973), pp. 173–79; C. G. Justice, J. R. Williams, and J. D. Clement, "Economic Costs of Air Pollution Damage," STAR CR–103, prepared by Science, Technology and Research, Inc. (for Southern Services, Inc., Birmingham, Ala., May 1973); T. E. Waddell, "The Economic Damages of Air Pollution," EPA–600/5–74–012 (Washington: Government Printing Office, 1974); National Academy of Sciences, National Academy of Engineering, "Air Quality and Automobile Emission Control," vol. 1, "Summary Report," prepared for the Committee on Public Works, U.S. Senate, 93d Cong., 2d sess., ser. No. 93–24 (Washington: Government Printing Office, September 1974), p. 121; Fred H. Abel, Dennis P. Tihansky, and Richard G. Walsh, "National Benefits of Water Pollution Control" (Washington, D.C.: Environmental Protection Agency, 1975); H. T. Heintz, Jr., and A. Hershaft, "National Benefits of Controlling Air Pollution," and G. C. Horak and H. T. Heintz, Jr., "National Benefits of Controlling Water Pollution," prepared for the Environmental Protection Agency by Enviro Control, Inc., under contract No. 68–01–2821, 1975. All cited in "Environmental Quality, the Sixth Annual Report of the Council on Environmental Quality", 1975, p. 517.

The benefits to be set against these costs are, of course, the gains from an improved environment. Of course, part of the benefit—such as aesthetic values—are not capable of precise evaluation. Table 3–3 shows a number of estimates of the total costs to society of air and water pollution. Since they were made for earlier years, they have been expressed to 1975 dollars in the last column of the table using the gross national product deflator to adjust for inflation. This makes no adjustment for population growth so the benefits may be somewhat understated. Most of the estimates in table 3–3 are intended to be lower bounds, but the National Academy of Science estimate is meant to be an upper bound.

If all pollution damages could be eliminated by 1984, the damage estimates to table 3–3 would be lower limits of the benefits from the EPA's programs. That would be so, because they do not include the benefits from pollution already prevented at the time of the estimate nor benefits from preventing additional pollution that would have occurred, in absence of regulation, after the date of the estimate. On the other hand, it is certainly unlikely that all adverse effects of pollution will be eliminated by 1984. If they are not, then the the benefits derived from environmental controls could be less than the damage estimates in table 3–3.

The estimates of the 1984 costs of air pollution controls are roughly comparable with the estimated damages from air pollution, so if most of these damages can be eliminated with the expected costs, the benefits of controls would be about worth the costs. In the case of water pollution, however, these estimated environmental damages are considerably less than the 1984 estimates of pollution control costs. For water pollution controls to pass a benefit-cost test the damages already prevented and the added damage beyond present levels that would be prevented by 1984 would have to be quite high. Of course these estimates probably do not include either all the benefits or all costs.

b. Costs and benefits of automobile safety regulation

A second area where cost-benefit estimates of regulatory controls are available is auto safety. The estimated cost to consumers of auto safety devices required by the National Highway Traffic Safety Administration rose from $40 per new car in 1966 to $246 per new car in 1973.[19] By 1973, the accumulated costs of all safety devices installed on all new cars sold during 1966–1973 had reached $13.4 billion, and the total cost of safety devices included in the 1973 model year was $2.9 billion.[20]

The General Accounting Office has attempted to evaluate the benefits gained by safety device requirements. GAO limited itself entirely to deaths and serious injuries avoided, thus ignoring accidents avoided as a result of safety devices. The GAO review concluded, on the basis of differences in death rates per model year, that required safety devices through 1970 had saved 28,230 driver and passenger lives through 1974. It concluded that the safety devices required through 1970 were worth the cost, although some questions were raised concerning the benefits of additional devices required after that date.[21]

More recently, a study prepared for the Joint Economic Committee of Congress suggested that federally mandated safety and environmental features have increased the price of the average passenger car by $666 in 1978; thus compliance with those regulations would cost the consumer something in the vicinity of $7 billion annually.[22] However the National Highway Traffic Safety Administration takes sharp exception to those estimations. According to NHTSA figures, the estimated average price to consumers of safety features in model year 1978 automobiles is only about $250, a figure that includes manufacturer and dealer profits. NHTSA also points out that, as a frame of reference, the average new car purchaser spends three to four times the amount for safety features for various comfort and convenience options, such as air conditioning and vinyl roofs. Finally the safety features, according to NHTSA, constitute only about 5 percent of the total vehicle price.[23]

c. Costs and benefits of selected OSHA standards

A third area in which some compliance cost estimates are available is occupational safety and health regulation. By executive order, OSHA along with other executive branch agencies, was required to prepare "Inflation Impact Statements" in connection with new standards proposed after December 1974. Such cost estimates for some proposed standards are contained in table 3–4.[24] These costs may be exaggerated, since they are derived from industry sources which have an incentive toward overstatement. In addition, they are based on exist-

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[19] General Accounting Office, *Effectiveness, Benefits and Costs of Federal Safety Standards for Protection of Passenger Car Occupants*, July 7, 1976 p. 26. By 1974 this had risen to $386 per new car, but the $122 additional expense in 1974 was due mainly to the seat belt interlock device which was eliminated by legislation in 1974.

[20] Ibid., p. 27. By 1974 the cumulated total was $14.5 billion and the one year expense for 1974 was $3.5 billion, but a large part of the increase in 1974 was due to the seat belt interlock which was subsequently eliminated.

[21] Ibid., pp. 29–36.

[22] "The Costs of Government Regulation of Business," prepared for the use of Subcommittee on Economic Growth and Stabilization, Joint Economic Committee, U.S. Congress (1978).

[23] National Highway Traffic Safety Administration, "The Contribution of Automobile Regulation," June 1978.

[24] Inflation impact statements were also issued on Vinyl Chloride Ethyl Butyl Ketone but detailed cost estimates were not included.

ing technology and do not envision future technical improvements, which could possibly lower compliance costs.

TABLE 3-4—OSHA Cost Estimates

[In millions of dollars]

Proposed standard	Capital investment	Annual operating and maintenance costs	Total annual cost
Noise:			
90 DBa standard	10, 500	241	[1] 1, 816
85 DBa standard	18, 500	241	[1] 3, 016
Coke oven standard	451–860	173–1, 150	241–1, 280
Arsenic standard	273	56	111
Cotton dust standard 0.2mg/m^3	2, 672	NA	688

[1] Calculated by the staff at 15 percent for depreciation and return on investment.

Sources: BNA current reports Jan. 22, 1976, for coke ovens, June 10, 1976, for arsenic, June 24, 1976, for noise and Jan. 6, 1977, for cotton dust.

The benefits expected from these standards were expressed in purely qualitative terms in the cases of noise and arsenic standards so that no quantitative relationship between costs and benefits can be reported. In the case of coke ovens, the study estimates that 240 excess deaths per year occur as a result of the conditions with which the standard is expected to deal.[25]

The cotton dust standard is estimated to prevent 1,749 cases of byssinosis (brown lung disease) per year in yarn preparation and weaving. The cost per year in yarn and weaving is estimated at $362 million, so the cost per case avoided is $207,000.[26] Of course that figure necessarily assumes that there will be no increase in the workforce, and does not necessarily take into account side benefits which may result from the action. So too, the incidence of these diseases may increase in the future unless controls are established. The standard also applies to ginning and cotton waste users.

OSHA had issued many other standards before December 1974, when no inflation impact statements were required. In one case, asbestos, an academic cost-benefit study was attempted.[27] The annual compliance cost was estimated at $73.5 million, and the expected number of lives saved per year was estimated at 1,596, implying a cost per life saved of something like $46,900.

B. Indirect or Unintended Cost Impacts of Regulation

1. Excessive capital investment

Many important costs of regulation are due to inefficient production decisions induced by regulatory rules. This, it should be emphasized, apply principally to economic regulation, rather than controls to protect the public health and safety.

[25] OSHA, "Inflation Impact Statement—Coke Oven Emissions." Feb. 7, 1976, pp. 67–69.
[26] OSHA, "Inflation Impact Statement—Cotton Dust," Vol. 1, p. V–44.
[27] Russell Settle, "Benefits and Costs of the Federal Asbestos Standard," unpublished paper presented at a Department of Labor Conference, March 18–19, 1975, in Annapolis, Maryland.

One is the so-called Averch-Johnson effect.[28] Where a regulatory commission sets rates on a basis that permits a specific return on the rate base, and when this allowed rate of return exceeds the cost of raising capital, the utility involved has an incentive to increase its rate base and thereby increase the net earnings of stockholders. In other words, the allowed profits would increase in proportion to the size of the rate base; there is an inclination toward investment decisions which use too much capital and therefore are unduly costly.

This can be accomplished in a number of ways. The firm can use especially capital-intensive methods of production, such as nuclear powerplants that use more capital and less fuel than conventional fossil fuel plants. It can carry more reserve capacity. Peak period rates could be set low relative to off-peak rates, thus encouraging greater peak demand—which, in turn, requires more investment in capacity, thus increasing the rate base and allowing greater profits.

This tendency to over invest results in more capital being used than would yield minimum costs. Moreover, the distortion is greater the closer the allowed rate of return is to the cost of capital provided the allowed rate of return exceeds capital costs. When the allowed rate of return is low it takes very large investments on the part of the regulated utility to importantly affect profits. In theory, the regulatory agencies have the power to exclude items from the rate base. Realistically, however, it is not easy to second-guess the regulated firms' investment decisions.

Just how widespread such distortions are is a matter of controversy. Distortions are unlikely to be serious where an agency sets rates for groups of competing firms, such as trucks, railroads, or airlines, because rates will be designed to yield the permitted rate of return for the industry as a whole. Any one firm that lowers cost by minimizing its investment would have little or no effect on the overall rates set by the commission and would increase its profits. Individual firms would therefore have little incentive to over invest.

In general, the conditions for the Averch-Johnson effect are most commonly found in utilities such as local electric, gas, and telephone service which are regulated at State or local levels.[29] Most federally regulated industries either do not have rate base-rate of return regulation or are regulated as whole industries rather than on an individual firm basis. The most likely examples at the Federal level are long-lines telephone and natural gas pipelines. Even in these cases and in the cases of monopoly utilities such as local electric, gas, and telephone, the utility might be less inclined to increase its rate base if there is a long regulatory lag during which it can benefit by minimizing costs. Again, in recent years when the allowed rate of return has probably been less than the cost of capital there would be no Averch-Johnson effect unless the firm expects a return in the future to a situation where the allowed rate of return exceeds the cost of capital.

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[28] Harvey Averch and Leland Johnson. "The Behavior of the Firm Under Regulatory Restraint." *American Economic Review*, Dec. 1962, pp. 1053–1069.

[29] The only empirical studies supporting the Averch-Johnson hypothesis have dealt with local electric power companies. They are: H. Craig Peterson, "An Empirical Test of Regulatory Effects." Bell Journal Spring 1975, pp. 111–126; Robert Spann, "Rate of Return Regulation and Efficiency in Production: An Empirical Test of the Averch-Johnson Thesis." Bell Journal, Spring 1974; and Leon Courville, "Regulation and Efficiency in the Electric Utility Industry," Bell Journal, Spring 1974, pp. 53–73.

If the Averch-Johnson effect does hold up, it implies that conventional rate of return regulation of monopoly utilities automatically carries with it inefficient allocation of resources. Even an unregulated monopoly would have incentives to minimize production costs though it would still set price above cost. An effectively regulated one would not minimize cost.[30]

2. Excess capacity

Another general effect of regulation is the tendency of high prices to induce excess capacity. If prices are set above minimum average cost and if ability to sell depends on capacity, firms will tend to build more capacity than necessary in order to get a larger share of the available profits.

A classic case was in the prorationing of oil. During the 1950's and 1960's the prorationing authorities maintained output at levels that assured prices that were very high relative to the costs of flush wells—or wells producing at high rates of flow. To do this they restricted output of flush wells to a given percentage of capacity. To get the right to produce oil you needed an oil well. Every oil well drilled brought another output quota. As a result many more wells were drilled than were needed to efficiently produce the oil available in known oil reserves. As additional wells were drilled output from each operating well had to be cut back to restrict total production and maintain the higher price. Partly as a result of this regulation, the United States produces a fifth of the world's oil with 90 percent of the world's oil wells.[31] Flush wells were cut back as far as 28 percent of capacity in the early 1960's.[32] Since then, increasing demand and limited new finds have lessened the problem. All oil wells since 1972 have been allowed to produce at 100 percent of the allowable rate, but the experience from the end of World War II to the early 1970's shows how regulation can induce a great deal of excess capacity.

A similar story can be told of the airlines as they were regulated until the passage of the "Airline Deregulation Act of 1978." Due to regulatory controls, airlines could not compete in prices until recently; but there was no limit to the number of flights they could schedule. The availability of flights at convenient times is their major inducement in competing for customers. When the Civil Aeronautics Board set fares that were high relative to costs, competing airlines found it profitable to add more flights.[33] As a result of such additions, airlines were unable to earn especially high returns, and half-empty aircraft were common. As the CAB operated in the 1960's, the loss of profits due to excess capacity led to another rate increase which in turn would yield more excess capacity, and so forth, leading to a seemingly endless "ratchet effect." As it became aware of these consequences, the CAB began to set rates that were estimated to yield the desired re-

[30] Of course, an unregulated monopolist might consume some potential profits in slack and inefficiency.

[31] U.S. share of non-communist world oil output was 20.2 percent in 1975 (International Petroleum Encyclopedia, 1976, pp. 302–303) U.S. share of oil wells is 88.7 percent (derived from CIA, "Major Oil and Gas Fields of the Free World," January 1976 and IPAA, "The Oil Producing Industry in Your State," 1975, p. 5).

[32] Congressional Research Service telephone conversation on Jan. 25, 1977, with Texas Railroad Commission, Austin, Texas.

[33] George W. Douglas and James C. Miller, "Economic Regulation of Domestic Air Transport, Theory and Policy," Brookings Institution, 1974.

turn with a load factor (percent of seats occupied) of 55 percent,[34] regardless of the actual load factor. If consistently adhered to, this policy would have ended the rachet effect, but the target rate of return the CAB chose (12 percent on all assets after tax) was so high that it still could induce a great deal of excess capacity. Much of this will become moot as the provisions of the "Airline Deregulation Act of 1978," which essentially deregulates the industry, become effective.

The same sort of thing may occur with common carrier trucking. Like airlines (at least until recently), common carriers cannot compete on price but can attract customers with prompt service, and this in turn means plenty of truck capacity. Excess capacity might be expected as a result. Adequate data are not presently available to know how much excess capacity actually exists among the common truckers, but substantial amounts seem probable.

3. *Regulatory constraint and encouragement of peakload pricing*

Another area in which regulation has sometimes resulted in inefficiency has been in the pricing of peak and offpeak services. The cost of providing services often differs greatly between periods of peak demand and offpeak periods. Peak periods costs include operating expenses such as fuel, labor, and materials, plus the full cost of plant and equipment. If there is no possibility of the plant being fully utilized during offpeak periods, plant is essentially not a scarce resource during these periods as it is in excess supply. Thus offpeak costs are properly seen as operating costs alone. Prices that reflect these differing costs will resut in a more efficient allocation of resources than prices that ignore them. For instance, if peak and offpeak customers are charged the same amount, the peak customers will demand more than they would at a price that reflected the full cost of serving them (which cost includes, of course, the extra capacity needed to serve the cost load demand) and, as a result, more plants will have to be built. At the same time, offpeak customers will buy less than they would if they were charged only the amount of the avoidable costs of serving them. As a result, plant utilization rates will be lower than they would be with peakload pricing, and plant costs per unit of output will be higher than they need to be.

Peakload pricing is especially important in public utilities because they sell services that cannot be easily stored (a manufacturer can smooth out peaks by producing for stock during slow periods) and because they are very capital intensive. Extra capacity in utilities results in much higher costs.

Long-distance telephone rates provide an example of peakload pricing. The Bell System charges higher rates during business hours than in the evenings and on weekends, when its circuits are not fully utilized. When offpeak rates were reduced sharply in the 1960's, the public responded so strongly that the peak was shifted from business hours to the early evening. This led the telephone company to revise its rates further, setting intermediate rate levels for the weekday evening hours with the goal of equalizing business hour and evening demand. Very low rates were set for late evenings and weekends when the circuits were still not fully utilized. As a result of this pricing

[34] Theodore Keeler, op. cit., in appendix to this volume.

strategy, the Bell System plant is more fully utilized than would be the case without peakload pricing. The result is lower overall rates and more efficient resource use.

In other areas, the response of regulatory agencies to peakload pricing schemes has been far less positive. The Federal Power Commission explicitly prohibited that strategy in a 1952 decision, requiring that half of capacity costs of natural gas pipelines be assigned to peak and offpeak customers alike in proportion to their annual purchases, and that the remaining half be assigned according to their peak period demands.[35] In subsequent years, the Federal Power Commission did permit departures from the 50-percent rule when it appeared that the pipelines would sustain large losses in offpeak sales as a result of the rule. The FPC's insistence that offpeak customers pay a substantial part of the pipeline's overhead was intended to shift some of the overhead costs from residential consumers to industrial users, who account for most of the offpeak demand.

An area where peakload pricing seems appropriate is in those aspects of rail freight with a strong seasonal pattern, particularly the movement of agricultural crops. For years there have been freight car shortages during harvest seasons. A natural solution would be higher freight rates, demurrage, and per diem charges (freight car rentals to shippers and railroads respectively) during peak periods. This would serve to keep cars moving and to induce shippers to postpone shipments during peak periods. No such seasonal variations were adopted during the 1950's and 1960's. The result was either shipping delays during peak periods or greater excess capacity during other parts of the year. The ICC finally did adopt seasonal variations in per diem charges in 1970, and the Railroad Revitalization and Regulatory Reform Act of 1976 provided explicitly for "railroad rates based on seasonal, regional, or peak period demand for rail services." [36] It is still too early to discern the effect of these new policies.

4. Regulatory impediments to technological change

In a number of instances regulation has acted to delay or impede technological progress.

A notable case was the unit train. By devoting an entire train to hauling coal from a single mine to a single powerplant a railroad can avoid switching costs and a large part of terminal and clerical costs and thus reduce total costs sharply. These potential gains have been known for many years, but the ICC had ruled as early as 1897 that lower rates on trainload shipments were illegal. The first authorization of multiple-car rates on particular routes occurred in 1939.[37] That policy was introduced slowly in other parts of the country. For example, until 1962, rail shipments of coal from the Appalachian mines to eastern cities was subject to individual car rates, which resulted in substantial discrimination in favor of coastal powerplants with access to imported residual fuel oil. Unit trains would have been more profitable for some railroads but only in 1962 did it become profit-

[35] In the matter of Atlantic Seaboard Corporation and Virginia Gas Transmission Corporation, 11FPC42 (1952). The offpeak customers were on interruptible service. This meant that service to them could be interrupted when demand exceeded the pipeline's capacity. This arrangement assured that the offpeak customers would not require the construction of additional capacity.

[36] 49 U.S.C. 15.

[37] Molasses from New Orleans, Louisiana to Peoria and Pekin, Ill., 235ICC485 (1939).

able to all four of the major coal-hauling railroads to shift to unit trains. The combination of rate bureaus and ICC regulation served to impede the rate reductions associated with unit trains long after some indiivdual railroads would have found them profitable.[38]

Another major rail innovation was "piggybacking" where truck trailers are carried on flat cars. That innovation took several forms—a single trailer on a short flat car or two trailers on a long one, and again, complete trailers or merely the container without wheels. The lowest cost form would be one container on a short flat car. The container is easier to secure to the flat car and offers less wind resistance. The shorter flat car is more stable on a curving road bed, can negotiate sharper turns, is easier to switch, and avoids excess capacity when only one container is shipped. However, the ICC's rail form A specified a minimum revenue for a fully loaded flat car. As a result, the price charged per container for a single container flat car had to be twice that of a two container car, in spite of the lower cost of the single container car. As a result there was too little incentive to use the more efficient method. Moreover, the ICC does not allow lower rates for containers than for whole trailers, thus truckers have no incentive to switch to containers, even though they are cheaper to haul.[39] In addition, the United States was generally slow in adopting piggyback compared with Canada. A likely reason is the regulatory policy that prevents American railroads from operating truck lines. Canada has no such prohibition.[40]

A third example was the Southern Railroad's introduction of the "Big John hopper," a large aluminum bodied freight car designed to carry grain at very low cost which permitted a 60-percent rate reduction on grain shipments in multiple car lots to the Southeast. The ICC decided that the proposed new rate would be inadequately compensatory and unjust and unreasonable, and the agency specified a higher rate. The ICC decision was appealed to the courts, and after 4 years of litigation the Southern Railroad was finally authorized to charge the proposed low rate.[41] In this case the full effect of the innovation was finally realized, but over ICC opposition.

The ICC has obstructed innovation in trucking as well. To cite one example, specialized carriers are generally prevented from taking backhauls by commodity restrictions in their certificates of convenience and necessity. But for these restrictions, new truck designs could in some cases permit profitable backhauls. For instance, the automobile carriers could be designed to carry other commodities as well, but the ICC has not permitted other freight to be hauled.[42]

Similarly, the FCC has delayed the introduction of cable TV and satellite communications. In the case of cable TV, a main reason for its adoption by a consumer is the promise of greater choice due to imported signals. However, imported signals reduce the audience for local broadcasters. In 1966, because of the threat to broadcasting revenues, the FCC froze all signal importation in the 100 largest markets.

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[38] P. W. MacAvoy and J. Sloss, "Regulation of Transportation Innovation," Random House, 1967.
[39] Aaron Gelman. "Surface Freight Transportation" in William Capron, ed., "Technological Change in Regulated Industries," Brookings, 1971, pp. 170–174.
[40] Ibid., p. 181.
[41] Ann Friedlander, op. cit., pp. 93–94.
[42] Gelman, op. cit., p. 179.

Six years later, the freeze was lifted but the FCC adopted rules that significantly limited the allowable imported signals. As a result FCC policy has greatly limited the extent to which cable is used and the number of signals it has been able to offer.[43]

Development of satellite communications has also been subject to obstacles from FCC policies. Satellite communications is much cheaper than oceanic cable, and thus posed a threat to the viability of the four transatlantic cables. That possibility was avoided by the FCC's decision that the Communications Satellite Corporation (COMSAT) could sell its services only to "authorized users" meaning common carriers in the affected countries. Transatlantic rates were maintained at high enough levels to keep the cables profitable and indeed a fifth ocean cable was laid. The fifth cable resulted in lower transatlantic rates but they were not so low as would have occurred if COMSAT had been able to compete directly for customers.[44]

The Federal milk marketing order program has also worked to suppress the sale of reconstituted milk produced from powdered milk. Processor-distributors are required to pay into the producers' settlement fund the difference between the price of the powdered milk they use and the price of class I fluid milk. This has kept reconstituted milk off the market in areas where market orders exist, although reconstituted milk has sold well in areas without such orders.[45] This policy is especially costly in areas far from the low cost milk producing centers, because transport costs are much lower for powdered milk than for fluid milk.

One of the most controversial instances of adverse regulatory effects on technical progress is in the field of pharmaceuticals. The Food and Drug Administration's controls of new drugs has become much more thorough since the 1962 amendments to the Food, Drug and Cosmetics Act, which requires FDA approval prior to human testing and proof of effectiveness as well as safety prior to marketing. The result has been a great increase in both testing and paperwork. The average clearance time for a new chemical entity increased from 2½ years in 1962 to 7½ years in 1972. Since the life of a patent did not change, the period of exclusive marketing was reduced from 14½ years to 9½ years. At the same time, average cost of development increased from $1.2 million in 1962 to $11.5 million in 1972.[46] in large part because of the additional testing required. Moreover, the risk involved in drug development has increased because of uncertainty about the proof of effectiveness.

The natural expectation would be that these drawbacks would discourage pharmaceutical research and development. In fact, there has been a sharp decline in the number of new chemical entities introduced, and the average number approved for commercial use in the United States fell from 56 per year in 1950–61 to 17 per year in 1963–75.[47] Moreover, much drug development seems to have shifted to other coun-

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[43] Bruce Owen, op. cit.

[44] M. J. Peck, "The Single Entity Proposal for International Telecommunications," American Economic Review, May 1960, pp. 199–203.

[45] Tanya Roberts, "An Evaluation of Federal Milk Price Regulation: History, Impact and Alternatives," in appendix to this volume.

[46] Henry Grabowski and John Vernon, "The Effect of Product Quality Regulation on Innovation: The Case of the U.S. Ethical Pharmaceutical Industry," NSF proposed RDA 7519823, 1975, p. 6.

[47] Henry Grabowski, "Drug Regulation and Innovation," American Enterprise Institute, 1976, p. 18.

tries. The United States is no longer the dominant leader in drug research, though much of the nondomestic research is done by subsidiaries of U.S. firms.

The decline in new drug development has several interpretations. The obvious one is that higher development cost and greater risk coupled with a reduced exclusive sale period have discouraged new drug development in general, and especially the development of certain products with very limited ultimate markets. An alternative interpretation is that the well is running dry. The great outpouring of new chemical entities in the earlier period, according to this theory, were the result of great breakthroughs in the World War II period, and no comparable breakthroughs are available today. The decline in new drugs did begin before 1962 and occurred in Europe as well as the United States. At the same time, we may have benefited from not having had to pay for some ineffective new drugs.[48]

Altogether, the new FDA rules have at least delayed the introduction of effective drugs by several years and may have inhibited the development of useful new drugs in a more fundamental way. If the latter is not true, then it would be because drug development activities have shifted to other countries.

5. Effects of regulation on competition

A common though not inevitable effect of economic regulation is to decrease competition in the regulated sector. Most old-line economic regulatory agencies control entry. This is true of the ICC, FCC, FPC now FERC (for pipelines), the banking agencies and State and local regulation of intrastate electric, gas, telephone and cable TV service. In general, regulation has made new entry very difficult. Typically an applicant has had the burden of demonstrating that a proposed service is both needed by the public and not presently provided. Often such applications are opposed by existing firms, with whom the applicant will compete. Such opposition has proven very hard to overcome. To cite an extreme case, the CAB since it was created in 1938 has never licensed a new trunk airline, although air traffic has multiplied 240 times in that period.[49] Of course, that CAB approach has been very much altered by recent congressional and agency initiatives toward deregulation.

Rates for regulated industries are often reached by agreement among competing firms and then enforced by the regulators. In the transportation industries the law expressly exempts these rate bureaus from the antitrust laws. A trucker, a railroad, or an airline can propose new rates independently, but if the new rate is lower than those of competitors, it is likely to be contested before the CAB, and overruled. Ocean freight rates are set by international "conferences," in which the shipping firms participate, and international air fares are set by the International Air Transport Association, to which airlines with foreign routes belong. Rates and fares set by these cartels are

[48] It was probably not a matter of safer drugs. In 1962 the law already required that drugs be proven safe before they were marketed. The main change in 1962 was that thereafter they had also to be proven effective. There were some new safety provisions with respect to the free market human testing as well.

[49] This was not for lack of applicants—the CAB received applications from 79 would be entrants from 1950 through 1974—none of which were granted. "CAB Practices and Procedures," p. 78.

theoretically subject to review by the FMC and the CAB respectively. In fact, they are usually approved.

Not only do the regulatory agencies permit collusion, they then enforce the agreed-upon rates. Freight rates set below those specified in an order are illegal. This is important. An agreement among hundreds of truckers if not legally enforced would almost certainly break down in short order. It is the enforcement by the regulatory agencies that makes the cartel stick.

The regulators generally are authorized to approve or disapprove mergers as well. In those decisions, competition is only one of the considerations—and one that often receives little weight. In ICC merger cases, the primary concern seems to be whether the merged firm is likely to divert business from other truck lines or railroads. Mergers among competing railroads or banks have been commonly approved by the regulators, though intervention by the Justice Department's Antitrust Division has made competitive effects important in bank mergers today. Virtually all regulatory commissions will permit or even encourage merger where an unprofitable firm is involved. However, the alternative of a merger with a firm in another industry is often prohibited, thus partially protecting corporate managements in regulated industries from takeover and limiting the injection of new management philosophies into the regulated sectors.

It is not inevitable that regulators should act to prevent competition. The FCC has made a number of decisions that permitted new entrants in parts of the telephone business—specifically independent microwave systems that compete with A.T. & T. in selling leased line services and independent manufacturers of telephone equipment that do compete with local telephone utilities in supplying telephone attachments, such as office switchboard systems. Even more striking is the SEC decision that prohibited the stock exchanges from setting minimum brokerage fee schedules and required competitively determined fees. Yet such procompetitive acts by the regulators is the exception rather than the rule.

The effect of competition on costs is mixed. In an unregulated competitive industry, entry and price competition compel firms to use minimum cost methods of production. Where either entry is prohibited or prices are set above minimum costs, this pressure for low cost is not present. Regulated firms interested in maximizing profits will still attempt to get costs as low as possible, but ineffective management is not eliminated by the competitive process.

On the other hand, competition can force costs up if rates are fixed by regulators. The drilling of unneeded oil wells under prorationing and the excess capacity in airlines both were the result of competition when regulation keeps prices high. Those can be avoided by allowing competition to affect prices as well as capacity. Then entry will continue only as long as prices exceed costs, and producers will be deterred from building excess capacity because prices fall to the level of costs.

6. Inflationary Effects of Regulation

The principle inflationary effects of regulation arise from its effects on the supplies and costs of goods and services. Regulation which requires increased capital expenditures, as for pollution controls, can

raise general demand pressure on prices, but it is important to recognize that the overall level of demand or spending is generally a matter for fiscal and monetary policy. Thus, the inflationary effects of regulation itself are not a separate or additional category of cost or impact, but a result of the other costs and effects discussed in this report.

Inflationary impacts or effects are not identical with increases in such indicators as the Consumer Price Index (CPI). Many regulations are intended to yield intangible benefits such as safer products and working conditions which are not fully reflected in the market prices of goods and services, and hence, are not directly reflected in the standard indicators of the cost of living. However, the costs imposed by such programs—in terms of pollution control equipment, etc.—will generally be reflected in prices. Thus, inflationary effects must be analyzed with great care. Unless the inflation index being used reflects all of the relevant costs and benefits, the estimates will be biased; and the bias will most adversely affect those programs with intangible, though often potentially very significant, benefits.

Clearly, the primary determinants of the inflation rate are fiscal and monetary policies affecting the overall level of demand or spending pressure in the economy, as well as such conditions as the nature of collective bargaining. Taking such policies and conditions as given, any regulatory action which yields benefits smaller than the costs imposed may be viewed as inflationary. That is, if regulation misallocates resources by requiring activities whose benefits are more than offset by the costs of regulation, the real output of the economy is reduced. Therefore, for any dollar value of total output, such as GNP, the average cost of final goods and services will be raised. Also there may be important side benefits of regulation, such as the development of new pollution control industries, which would not be reflected in these estimates. This broad view of inflationary impact is that used by the Council on Wage and Price Stability which has noted: "In the Council's view, a regulatory action is inflationary if it generates costs to society exceeding its benefits. . . . On the other hand, an action generating benefits in excess of its costs would be anti-inflationary. . . ." [50]

In light of the clear bias against safety and environmental regulations inherent in measuring inflationary impact by the effects on standard price indices, this broader view appears clearly preferable. Yet it is also clear that application of the benefit-cost principle of inflationary impact is hindered by the difficulty of measuring both benefits and costs. However, the approach of the Council on Wage and Price Stability clearly indicates that the inflationary impact of regulations cannot and should not be approached simply by considering effects on costs and total spending. A report on the Inflation Impact Statement Program by the Council on Wage and Price Stability and the Office of Management and Budget clarifies this point:

> Take, for example, an environmental standard designed to result in cleaner water. If the increase in costs imposed by adoption of the standard is smaller than the decrease in costs realized by individuals as a result of having cleaner water, then the total cost to individuals is reduced. Resources are being used more

[50] Comment of the Council on Wage and Price Stability before the U.S. Environmental Protection Agency, Air Quality Standards Interpretative Ruling, Mar. 7, 1977, p. 5.

efficiently (in this instance, devoting more resources to cleaner water is efficient), and the overall impact is anti-inflationary. On the other hand, if the costs of cleaning the environment exceed the reduction in costs to individuals the overall impact of the regulation is inflationary.[51]

It is clear that reductions in "costs"—such as improved aesthetic quality of streams or greater useability of watercourses for swimming and fishing—should be considered in determining whether a program is in fact inflationary. Proposals or regulations should not be labeled inflationary simply because the available methods of accounting and measurement are flawed and do not give due weight to the actual benefits or costs. Thus, an analysis of the multi-billion dollar water pollution control program would indicate that it may induce increased capital expenditures and, hence, greater demand and inflationary pressures. However, as the program becomes increasingly effective, water quality should improve, raising the total real value of output—an anti-inflationary impact which is unlikely to be properly or fully reflected in price indices.

Some regulations may have inflationary effects by making it more difficult for firms or industries to respond to increased demand by expanding output. Thus, regulations which prohibit many truckers from carrying certain commodities or restrict their choice of routes mean decreased total supply available to meet increased demand for shipment of those goods or on those routes. This suggests either that prices will be pushed up more rapidly than they would otherwise or, if trucking rates are fixed by ICC controls, that shortages may result. In either case, real output is smaller than it would otherwise be and the real cost of living or doing business is increased, which is an inflationary effect. Thus, any regulation which restricts the ability to expend supplies can have inflationary consequences.

Regulations which hold prices below market levels or fix prices for some period of time might be seen as anti-inflationary. This can be true in a limited sense, in that keeping the price of a good below what it otherwise would be means that the CPI or some other price index will, in the first instance, necessarily be lower. However, if supplies are depressed or restricted by the depressed price, total output will fall, and some users must turn to less desirable or more expensive alternatives. For example, regulation of natural gas has induced some users to shift to more expensive imported products. This itself raises costs and has an inflationary impact. Further, as users seek alternatives to the price controlled product, the prices of the alternative product may be pressed upward.

Yet, fiscal and monetary policy, as well as the general structure of the economy in terms of degree of competition and the nature of collective bargaining, and other important institutions are clearly more significant factors in setting the pace of general price increases. Many of the anti-inflationary benefits of regulation are unlikely to be fully reflected in the usual price indices. Clearly, regulations which increase costs or restrict output, without commensurate benefits, are inflationary. But, in general, the inflationary effects of regulation are a result of the costs and effects discussed in this report, and not a separate or additional element of cost.

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[51] COWPS–OMB Report, *op. cit.*, p. 5.

7. Some industry-specific costs of regulation

In addition to the costs described to this point there are a number of costs of regulation that are specific to particular areas of regulation. Some of the most serious concern ICC regulation of trucks.

a. ICC constraints on truckers

ICC certificates of public convenience and necessity of common carrier truckers contain restrictions limiting the commodities they can haul, the routes they can cover and, in the case of irregular-route carriers, the areas they can serve.

Truckers operating on general commodity authority granted by the ICC can ordinarily carry a broad range of products, excluding only explosives, personal effects, and commodities in bulk. But there are also many specialized commodity carriers, which have narrow commodity restrictions. In some cases, such as tank trucks, the character of the truck limits what can be hauled. Where this is not true, the commodity restrictions serve to limit the possible products hauled and therefore impose, to some extent, empty backhauls and waste.

Another problem in this area is circuitous routes. Regular route carriers sometimes must travel over indirect routes, and thereby incur greater cost than would be necessary. The opposition to more direct routes originates with competing carriers whose profits would be seriously eroded if rivals had shorter and faster routes. Similarly, irregular route carriers must often pass through specified "gateways" in traffic among points in their service areas. In response to the energy crisis in February 1974, the ICC permitted irregular-route carriers to remove as much as 20 percent of the preexisting circuity, and this reduced the problem somewhat. But regular route carriers and irregular route carriers with more than 20 percent circuity are still saddled with more mileage than is necessary.

Another way in which the ICC policies affect cost is the allocation of freight between rails and trucks. When first regulated, truck rates were made to coincide with rail rates. Since trucks are faster and more reliable they were able to skim off much of the high freight rate traffic. This was possible because of the value of service rate structure of the railroads. That is, the railroads charged what the traffic would bear—high rates on high value goods and low rates on low value bulk commodities.

The natural response of the railroads was to reduce freight rates on high value goods, a change that was resisted by the truckers. And that partially explains why, as late as the midsixties, the ICC was preventing rate reductions by the railroads in competition with other modes. This occurred despite extensive evidence in the 1950's that the marginal costs of railroads were lower than trucks for longer hauls (roughly more than 200 miles). Thus much of the shift to trucks was uneconomic.[52]

This problem is far less serious today, however. For the last decade the ICC has interfered much less in rail freight rate adjustments. The development of the Interstate Highway System and the rise of owner-operator truckers have increased the range over which trucks

[52] John Meyer, Merton J. Peck, John Stenason, and Charles Zwick, "The Economics of Competition in the Transportation Industries," Harvard University Press, 1964, Chapter VI; and Ann Friedlander.

costs are lower than rail. The distortions induced by value of service rates are undoubtedly still present, but they are less than in the past.

Haulers of agricultural products and private carriers that haul their own goods are exempt from ICC control. These carriers are affected by ICC policies, however, and their costs are increased as a result. Agricultural carriers must not carry other products, and private carriers cannot carry goods of other firms or even goods of other subsidiaries of the firm that owns the truck.[53] As a result, carriers of agricultural products and private carriers commonly are without a backhaul, and their costs are higher as a result. The large amount of such exempt and private traffic in spite of this disadvantage is evidence of the elevation of comon-carrier truck rates above marginal costs.

b. Effects of FCC spectrum allocations and regulation of cable television

Federal Communications Commission policies have also increased social costs in broadcasting, though in many cases they can be discounted as ordinary human errors. When television first appeared the FCC seriously underestimated the public demand and allocated only 13 VHF channels. In addition, in allocating licenses, the Agency followed a policy of localism, meaning there was an attempt to assure that as many cities as possible would have local channels. Consequently, FCC licensed no more than three or four VHF channels per city in the largest markets and fewer in others. If more VHF channels had been assigned to TV or if a set of high powered regional stations had been licensed, most viewers could have had access to a half dozen channels, and today there might have been six networks instead of three. Consumers would have had wider choices as a result of increased competition. Also, the enormous profits of owners of licenses would have been less.

Recognizing its error with the VHF spectrum, the FCC in 1952 set aside 70 UHF channels for television. However broadcasters using UHF channels were at an extreme disadvantage. The audience was initially limited because most television sets were not equipped to receive UHF channels. Since 1962, all new sets sold in this country must be able to receive UHF channels. However, the UHF disadvantage continues because signals of that spectrum have shorter ranges than VHF and because it has been difficult to tune them accurately. In general, independent UHF stations have lost money and network UHF stations have earned far lower profits than VHF stations.

As a result, the UHF band is largely unoccupied. The remainder of the electromagnetic spectrum is fully used and the large part of the total spectrum devoted to UHF would be of great value for other communications purposes, though at present it remains largely idle.

Greater consumer choice is possible through cable TV, where there is no interference problem and where there is room for dozens of chan-

[53] The reason for this prohibition is to eliminate the advantages that conglomerates would have over specialized firms because they would have backhauls (empty return trips) of their subsidiaries' products whereas specialized firms would have no such backhauls. No such problem would arise at all if the ICC did not prevent backhauls and restrict the operations of common carriers and private truckers.

nels. The FCC has asserted regulatory authority over cable, however, and that assertion had, until recently, been sustaind as lawful by the courts. The court of appeals decision in *Home Box Office* [54] directly relaxed some FCC restrictions on pay cable television and may have cast doubt on other aspects of cable regulation as well.[55] Subsequent FCC regulation of cable has been very restrictive. It has severely limited the number of signals that cable companies can import. Moreover, under the FCC's antileapfrogging rules, the signals must be imported from the nearest source. In most cases this cuts out New York and Los Angeles whose strong independents could provide most of the new programing. Further FCC policies limit consumer choice much more than is necessary in order to protect over-the-air broadcasting. Considering the success of cable in such cities as San Diego, consumers would be willing to sustain the cost of additional channels.[56] Unlimited free importation of signals would mean larger profits for cable interests and greater viewing choices for consumers.

c. Cost impacts of FPC (FERC) regulation of natural gas

The Federal Power Commission's (now FERC) control over gas prices also has had its effects on allocation of resources and therefore on costs of production. By keeping the prices of gas down, FPC policy has created a shortage which has resulted in various sorts of rationing. Industrial consumers with alternative sources of fuel have, as often as possible, chosen gas because it is so cheap. Residential consumers have not been allowed to bid gas away from them. In consequence, gas undoubtedly has not been committed to its most valuable uses in many cases. Under provisions of the recently enacted Natural Gas Policy Act of 1978 by 1985 deregulation of the bulk of new natural gas will reduce these tendencies, though much natural gas will be still subject to price controls. Because of this, prices to consumers will generally remain below the costs of extra supplies.[57]

One effect of gas regulation and the exemption of intrastate sales has been to divert large amonnts of gas into intrastate markets. This in turn has encouraged location of many gas-using industries in gas producing states even when real cost advantages do not otherwise exist. The transfer of industry from the Northeast and Midwest to the Southwest is in part a consequence of this regulatory policy. Under the Natural Gas Policy Act of 1978, price controls will be extended to intrastate sales of new gas, mitigating these effects.[58]

d. Regional effects of Federal milk pricing regulation

Similarly, milk marketing orders which set high prices, for milk intended for direct human consumption, at points far from the upper Midwest has shifted an important part of the milk production industry to consuming centers far from its natural center. A substantial part

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[54] *Home Box Office Inc.* v. *FCC*, DC Cir. 75-1280, Mar. 25, 1977.

[55] See Paul W. MacAvoy, "Deregulation of Cable Television," American Enterprise Institute for Public Policy Research, pp. 89–97.

[56] One study estimated that the public would be willing to pay $3.5 billion to receive the three network affiliates plus four strong independents. Since the cost of providing that much cable service would be $1.8 billion, they would have a net gain of $1.7 billion. Roger Noll, Merton J. Peck, and John J. McGovern, "Economic Aspects of Television Regulation," Brookings, 1973, p. 171.

[57] Department of Energy Office of Public Information, "National Gas Act," November 1978.

[58] Ibid.

of milk production now occurs in such areas as Texas and Florida that would, in an unregulated market, be produced in the Upper Midwest. The location of milk producers in high cost areas results in higher milk production costs than necessary.

C. The Overall Effect of Regulation on Prices and Economic Welfare

1. Cost impact evidence from unregulated sectors

A glimpse of the costs of regulation can be gained from consideration of comparable industries not subject to such controls.

For example, intrastate airlines are exempt from CAB regulation, though they are subject to controls at the State level. In both California and Texas, vigorously competitive intrastate airlines have appeared whose rates are considerably lower than CAB-regulated carriers. For instance, in 1975, the fare from Los Angeles to San Francisco was $18.75 compared with $38.89 and $37.96 on the equally long interstate routes from Chicago to Minneapolis and New York to Pittsburgh respectively.[59] In general, the intrastate fares are 50 percent to 70 percent of interstate fares for similar distances.[60] The difference is not primarily one of profits but rather of much bigger costs on the routes controlled by the CAB due, in turn, to competition among carriers in scheduling and the resulting large scale excess capacity. All of this has been changing under CAB administrative reforms; and implementation of the recently adopted "Airline Deregulation Act of 1978" should further lessen these efforts.

Another glimpse of what might be possible in unregulated markets occurred in the 1950's when courts ruled that fresh and frozen poultry and frozen vegetables, fruits, and berries were agricultural products and therefore that truck transportation of such items was exempt from ICC regulation. In 1957, the Department of Agriculture conducted studies,[61] of unregulated truck rates and services compared with the earlier regulated experience. The Department found that truck rates on fresh poultry fell by an average of 33 percent, those on frozen poultry fell by an average of 36 percent, and those on frozen fruits and vegetables fell by an average of 19 percent. During the same period rail rates were rising. In general it was reported that the quality of service had, if anything, improved. It is uncertain whether these products were special cases or whether the situation has significantly changed since 1957,[62] but those experiences suggest that unregulated rates would be at least 20 percent lower than regulated rates. The large amount of private carriage (roughly 40 percent of truck freight) in spite of the lack of backhauls in many cases suggests

[59] "Civil Aeronautics Board Practices and Procedures" Report of the Subcommittee on Administrative Practice and Procedures of the Senate Judiciary Committee, GPO, 1975, p. 41.

[60] Ibid.

[61] J. R. Snitzler and R. J. Byrne, "Interstate Trucking of Fresh and Frozen Poultry Under Agricultural Exemption," USDA Agricultural Marketing Report 224, (1958 processed) and "Interstate Trucking of Frozen Fruits and Vegetables Under Agricultural Exemption", Agricultural Marketing Report No. 316 (1959 processed).

[62] The exemptions were eliminated by new legislation in 1958.

that regulated rates remain quite high compared with marginal costs. Again high rates resulting from regulation do not necessarily go to profits. Some of the difference has been capitalized and appears as "good will" on the books of trucking firms that have acquired truck operating rights by purchase or merger.[63] Another part of the business return has probably been won by the Teamsters Union for its members in the form of higher wages (a large part of the exempt carriage is hauled by nonunion owner-operators), and some has probably gone into higher operating costs due to excess capacity, circuitous routes and empty backhauls.

2. The cost effects of price controls: Principles and evidence from energy and transportation regulation

In other areas, regulation has resulted in prices much lower than would occur in unregulated markets. The most striking case is natural gas where gas sold in interstate commerce has been strictly regulated with an average price (in June 1976 [64]) of 53.67 cents per thousand cubic feet (MCF). In contrast, gas sold in intrastate commerce had a price of about $1.60 per MCF in the second quarter of 1976.[65] If regulation were eliminated, the price would certainly rise and would probably exceed the intrastate level, because the entire country would be bidding for it and not just those consumers in gas-producing States. Provisions of the recently enacted National Energy Act will ultimately have this effect, at least in part.

Similarly, the price of "lower tier oil" (oil subject to price controls in 1975 produced in volumes no greater than the same property yielded in 1977) was $5.44 per barrel in June 1978. At that time, $12.15 per barrel was the price of "upper tier oil" (oil produced on a particular property in excess of its 1975 output plus the quantity of oil produced in 1975 and not subject to price controls in 1975—roughly oil produced from particular properties in excess of their 1972 levels). And imported oil and oil from wells producing no more than 10 barrels per day were not controlled and were selling at a price of $13.28 per barrel in June 1978.[66] The high prices for imported oil are certainly not competitive, but instead are determined by an international cartel. But those prices do give some indication of what domestic producers would receive absent regulatory controls.

a. Distributive effects of controls

Prices above or below competitive levels at least represent transfers from and to consumers. That is, where prices are increased by regulation, consumers are poorer and producers are richer as a result. Since both consumers and producers are part of society, the transfer is not itself a cost to society as a whole.

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[63] According to the American Trucking Association, "Recent acquisitions in the motor carrier industry indicate that amounts paid for operating authorities are approximately 15 to 20 percent of the annual revenue produced by those authorities." American Trucking Association, "Accounting for Motor Carrier Operating Rights," a brief and petition presented to the Finance Accounting Standards Board, undated, about 1975, p. 6.

[64] FPC press release 22727, Nov. 11, 1976.

[65] FPC Opinion 77A, pp. 112–113. In the second quarter of 1976 the average price in new contracts in intrastate commerce was $1.59 per MCF and the average price in renegotiated contracts was $1.66 per MCF.

[66] Telephone conversation with Ivan Maple of Department of Energy, June 13, 1978.

The transfers may be large, however, and thus are certainly a matter of concern. For instance, total revenues of the scheduled airlines before subsidy were $16.6 billion in the year ending June 30, 1976.[67] If their fares are elevated by 20 percent as a result of regulation, then consumers paid $3.3 billion more for air travel used in that year than would have been the case in the absence of regulation. Similarly, common carrier truck revenues were $20.7 billion in 1973.[68] If truck rates were elevated by 20 percent as result of regulation, then consumers paid $4.1 billion more for truck freight moved in 1973 than they would have for the same service in the absence of regulation. If these were merely transfers they would mean that consumers were poorer and carriers were richer by the indicated amount. In fact, however, the higher prices that result from regulation seem to go mainly into higher costs as a result of excess capacity, empty backhauls, circuitous routes, and the like—and these are real costs to society.

Prices that are below market levels also involve transfers, this time from producers to consumers. In 1975, 11.4 trillion cubic feet of gas subject to FPC controls were sold.[69] In the absence of regulation, the average price of this gas would have been at least $1 higher and perhaps as much as $1.50 higher than the regulated price. This means that gas consumers paid at least $11.4 billion and perhaps as much as $17.1 billion less for gas than they would have in the complete absence of regulation, and gas producers received that much less. Similarly, in the absence of regulation, all oil would sell at the import price, consumers would pay about $15 billion more and domestic producers would receive about $15 billion more per year than at present.[70]

b. Effects of controls on resource allocation and efficiency

Prices above or below competitive levels do cause a net loss to society, however. Figure 1 represents the demand and minimum attainable costs for some services such as trucking where price is set above competitive levels. Consumers would be paying P_1 and buying Q_1, but they would be willing to buy more of the service at lower prices, and it could be supplied at real costs lower than the price. The difference between the price that consumers would pay for a bit more output and the cost of supplying additional services represents a net loss to society because consumers value extra output more highly than its cost of production. For instance, with a small reduction in prices from P_1 to P_2 consumers would buy the additional amount of services represented by the width of the first narrow column in figure 1 (Q_1–Q_2). The cost of that service in terms of other goods given up is indicated by the cost of

[67] CAB, Bureau of Accounts and Statistics, "Quarterly Financial Review," vol. 2–76, September 1976. Total revenues were $14,200,000,000 for the trucks and $1,400,000,000 before subsidies for the local service airlines.

[68] ICC, third release of part 7, "Transportation Statistics in the United States for the Year Ended Dec. 31, 1973" (for class I and II carriers—their total revenues were $19,000,000,000) and "Selected Statistics of Class III Motor Carriers of Property, 1973." (Their total revenue was $1,700,000,000).

[69] FPC form 15, 1976, cited in opinion No. 770.

[70] David Montgomery, op. cit., pp. 173–4.

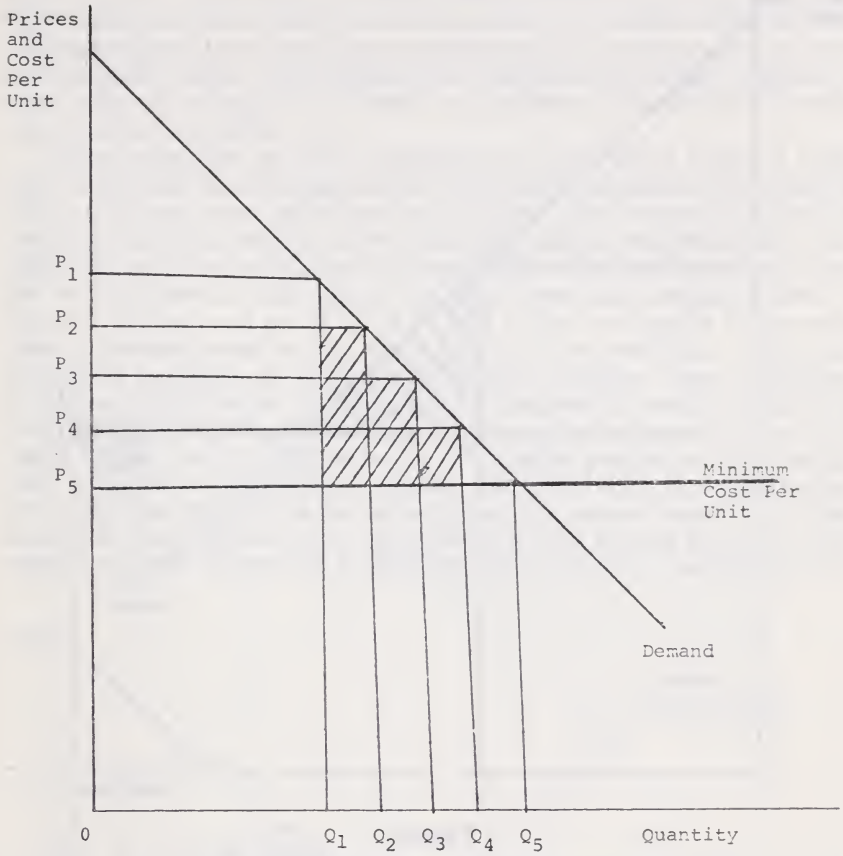

FIGURE 1

Efficiency gains from cost-based pricing—I

production, so the net gain to society of producing the small additional output is shown by the difference between the price and the cost which is shaded in figure 1. Similarly, a further price reduction to P_3 would result in a further addition to consumption shown by the second column with the further gain indicated by the shaded part of the second column. This can continue until the price reaches a point where it just covers suppliers' costs (P_5 in figure 1). Beyond that point there could be nothing more to gain from lower prices, since the value of extra output to consumers would be below cost. Figure 1 understates the total loss because of the large drops in price that were used in order to make the diagram readable. Figure 2 represents the same analysis but with infinitesimal changes in price. The shaded triangle represents the value to consumers over and above the minimum attainable costs of output that could be produced and is not because of regulatory in-

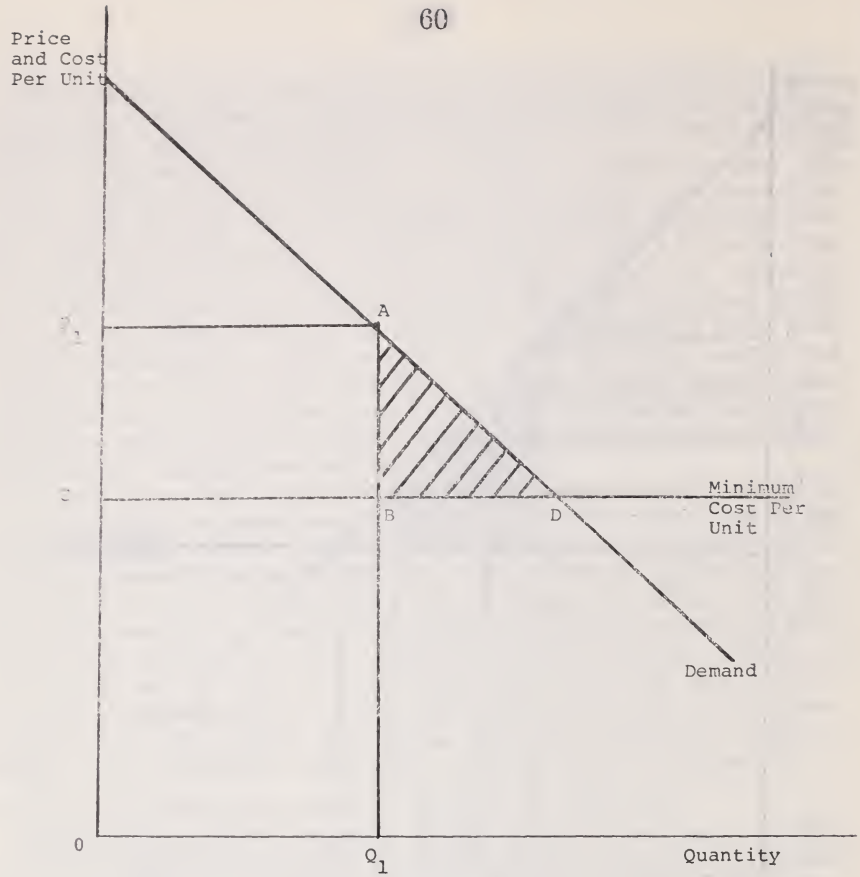

FIGURE 2

Efficiency gains from cost-based pricing—II

creases in price. This is a deadweight loss that consumers lose but producers do not receive so it is a net loss to society.[71]

This loss can be estimated, though such attempts are very inexact because they depend on estimates of elasticity of demand and supply—that is, how responsive demand and production are to changes in price. If demand is very inelastic (unresponsive) then the social loss due to high prices is small because the high prices do not significantly distort consumption decisions. Let us assume that the demands for air travel and truck freight have elasticities of 1—meaning that a 10 percent fall in price will lead to a 10 percent increase in quantity demanded. Then, if regulation results in 20 percent price increases, the social losses involved in high prices for these two groups of carriers would be about 2 percent of their revenue.[72] Using $16.6 billion for airlines, the social

[71] The same diagram shows the value of the transfer involved. It is the elevation of price (P_1C) times the output (OQ_1) and can be represented by the area of the rectangle P_1ABC. If, as seems likely, regulation has resulted in a rise in costs above the minimum to P_1 as a result of excess capacity, empty backhauls, and the like, then the total loss to society would be the total area of the rectangle plus the triangle or the area P_1ADC.

[72] The formula is $\frac{1}{2} \times$total revenue$\times$(percentage margin over minimum cost) $^2\times$ elasticity. Assuming a margin of 20 percent and an elasticity of 1 the loss is $\frac{1}{2}(.20)^2\times$ total revenue$\times 1$ or $.02\times$total revenue. A much more careful attempt to estimate the social loss from prices in excess of cost in freight was made by Ann Friedlander ("The Dilemma of Freight Transport Regulation," Brookings, 1969, pp. 73-74) for 1961. She estimated that rail freight rates resulted in a social loss equal to about 2 percent of rail revenues and that truck rates involved a social loss in excess of 1.4 percent of truck revenues. The effect of rail rates arose not because they exceed costs on average but because freight rates for individual commodities often do.

cost would be about $332 million in 1975–76. The loss for trucks, where 1973 revenues were $20.7, would be about $414 million. While these estimates should not be taken very seriously, the orders of magnitude are probably right. These losses are over and above any increase in cost induced by regulation. Such cost increases are almost certainly much more important.

When prices are set below competitive levels, there is also a social cost. The result is a shortage. Many industrial customers who would be willing to pay more have been cut off from gas consumption, and in many parts of the country, new residential customers are unable to buy gas. The social cost of these shortages can be calculated on a basis similar to that used in calculating the loss from high freight prices. In figure 3, the price of gas is set at P_1 and a shortage results in the sense that consumers want to buy Q_F but only Q_1 is available. Additional output is available at higher prices. For instance, some consumers would be willing to pay P_2 for another bit of gas that would be supplied at a price only slightly higher than P_1. The net gain to society from that extra supply can be represented by the shaded portion of the first column of figure 3. Similarly, a further rise in price to P_3 would induce yet more gas production for which some consumers would be willing to pay P_7 for a further gain represented by the shaded portion of the second column. There will be further gains until the equilibrum price

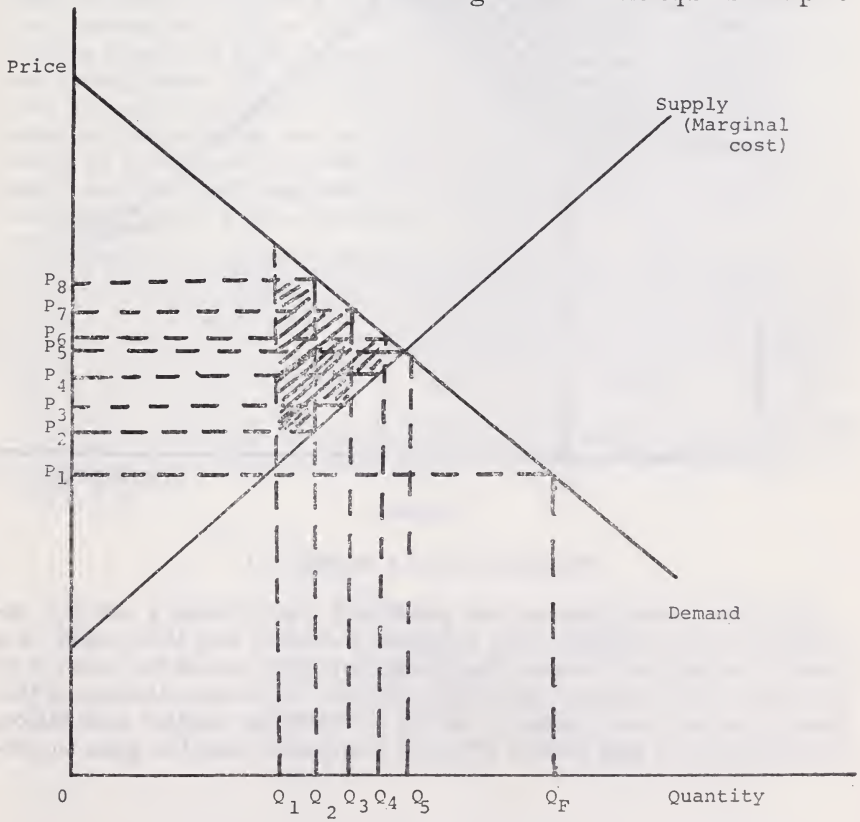

FIGURE 3

Economic costs of a shortage—I

is reached. In general, the gain to society from higher gas prices can be represented by the shaded triangle in figure 4. If prices were to rise to P_e, present gas consumers would lose the amount represented by the rectangle marked by horizontal hatching, but this would be a gain for domestic gas producers of the same amount.

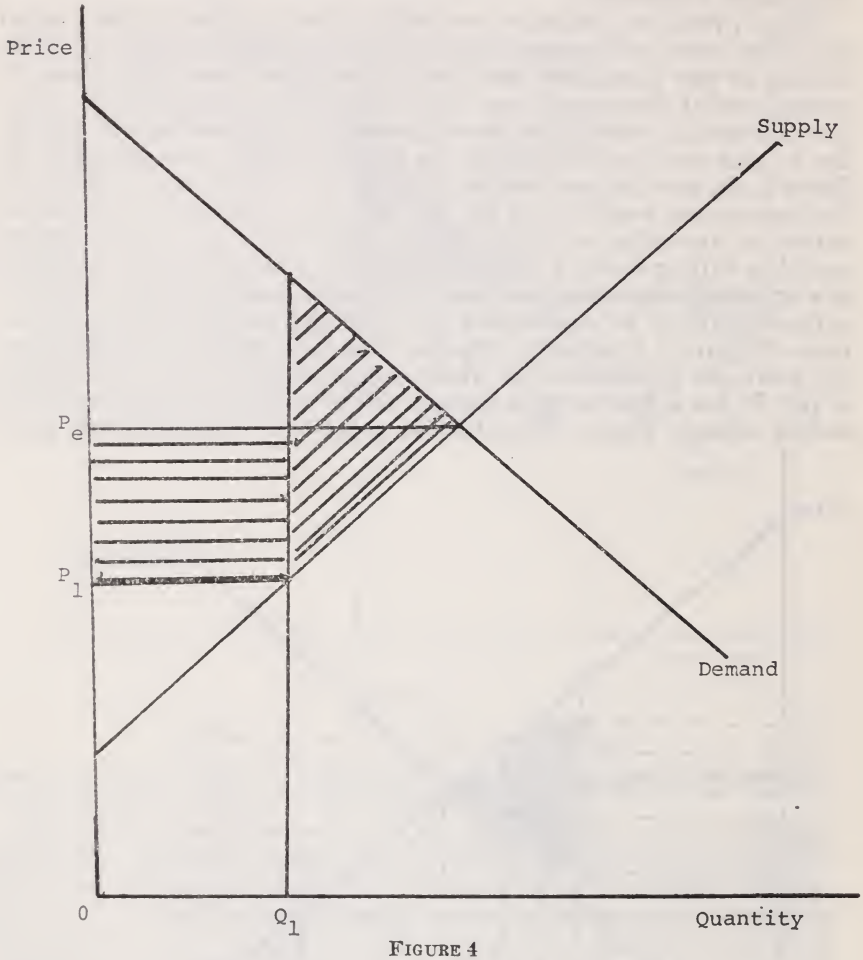

FIGURE 4

Economic costs of a shortage—II

Domestic consumers and gas producers would make a net gain indicated by the triangle with diagonal hatching and this would be a gain to society as a whole. How large this gain would be depends on the slope of the demand and supply curves. No direct estimates of this loss to society are available, but in a somewhat similar calculation, Paul MacAvoy and Robert Pindyck concluded that the gain to con-

sumers from phased decontrol would be in the neighborhood of $2.5 billion in 1978.[73]

In the case of oil, there is no shortage because there are unlimited supplies at world prices. Domestic oil producers do lose a good deal because their prices are well below world prices but this is mainly a transfer to consumers. However, there is a net loss to American society to the extent that domestic oil properties produce less than they might because of their lower prices. As a result oil is imported at higher cost than it would take domestic producers to produce that much oil. The social cost of this distortion has been estimated at $1 billion.[74]

D. The Total Cost of Regulation: Overview and Appraisal of Estimates

An estimation of the total cost of regulation will not be attempted here. However, table 3–5 presents a number of estimates of the costs of regulation, along with comments and criticisms. Such an effort was made by the Office of Management and Budget.[75] After reviewing the OMB estimates, the GAO took strong exception to their accuracy.[76] The main elements of the OMB estimates and the subsequent GAO comments are shown in table 3–5. Assuming that gross costs are equal to net costs—after subtracting benefits—when no gross cost is given, the OMB estimates sum $113.3 to $135.4 billion in 1975. Former President Ford summarized this as $130 billion,[77] presumably by taking a figure near the upper end of the range to allow for many items for which there were no estimates. The GAO did not issue its own total estimate. However, such an estimate can be inferred, by acceptance of the OMB estimates on which there was no comment, the GAO implied "estimate" would be somewhere between $33.8 to $38.8 billion—a figure significantly less than that suggested by OMB. It should be noted that both "estimates" cover a broader range of regulatory activities than those

[73] They assumed that consumers had either unlimited supplies of gas or none at all. The demand by those with unlimited supplies is indicated by D_1 in the adjacent diagram. Total demand is shown by D_2. The demand by those with no access to gas is the difference between D_1 and D_2. With deregulation price rises from P_1 to P_2. Those who got gas that was not available at P_1 received gains equal to the area measured by the diagonal hatching. MacAvoy and Pindyck estimated this gain to be $2.5 billion in 1978. The offsetting loss by consumers who already have gas is somewhat less and is, in any case, merely a transfer to domestic producers. (MacAvoy & Pindyck, "The Economics of the Natural Gas Shortage," (1960–80) North Holland Publishing Co., 1975, pp. 53–54. (Diagram is on next page.)

[74] David Montgomery, op. cit.

[75] See General Accounting Office. An Economic Evaluation of the OMB Paper on "The Cost of Regulation and Restrictive Practice" published as a staff paper by the Subcommittee on Oversight and Investigations, House Committee on Interstate and Foreign Commerce, September 1975. Appendix III is the OMB paper.

[76] Ibid., main text.

[77] Ibid., p. 13.

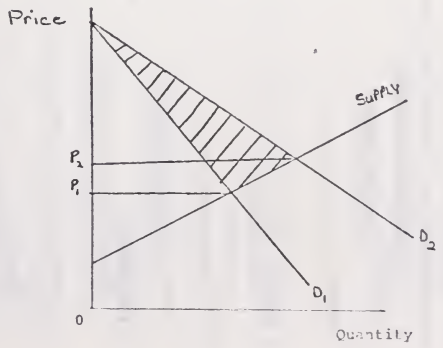

TABLE 3–5. OMB ESTIMATES OF THE COST OF REGULATION AND GAO COMMENTS

[Dollar amounts in billions]

Item	Estimated cost— Gross	Net	GAO Comment	Implied GAO estimate Gross	Net	Our comment
I. ECONOMIC REGULATION						
A. Trade Restrictions						
1. Foreign		$15.0	This includes oil import quotas (1,500,000,000) and assumes excess capacity in agriculture due to foreign barriers to trade (3,000,000,000 to 5,030,000,000). Neither applies today.		$3.0–$5.0	OMB acknowledged GAO's points. None of these are included in cost of regulation in this paper which deals only with domestic regulation.
2. Domestic:						
Fair trade laws		2.0	This is an income transfer, not a welfare loss to society.			No longer relevant since fair trade laws are unenforceable under new legislation.
Robinson-Patman Act		(1)				OMB said at least as costly as fair trade but no estimate available.
B. Regulated Industries						
1. Transportation:						
Surface		4.0–9.0	The lower estimate seems reasonable		4.0	This is based on T. R. Moore estimate. Almost certainly exaggerated. See J. R. Nelson, pp. 79–92.
Air		2.0–4.0	Based on a simple extrapolation of San Francisco-Los Angles fares. Not necessarily correct for the country as a whole.		(1)	
Maritime:						
Rate structure		(1)				
Cargo preference (Jones Act)		(1)				
2. Communications: Television		8.0	Based on Noll, Peck, and McGowan's estimate of what 7 channels of TV would be worth to consumers. Not the cost of regulation but of localism in TV.		2.4	Based on what San Diego cable subscribers are willing to pay for 4 more channels.
3. Energy (gas, electric, nuclear)		(1)				
4. Financial institutions:						
Banking, savings and loans		(1)				
Secondary security markets		(1)				
5. Agricultural marketing orders		(1)				

6. Labor:					
Minimum wage		7.0–9.0	Just a transfer payment. The amount by which wages were increased by the 1973 act. Not the amount of output reduced.		
Davis-Bacon Act		1.0	No comment	1.0	
C. State and Local Regulation					
1. Insurance		(1)			
2. Banking		(1)			
3. Transportation		(1)			
4. Price fixing (milk, real estate settlement fees).		(1)			
5. Professional and occupational licensure		(1)			
6. Building codes and zoning requirements		2.0–4.0	No comment	$2.0–$4.0	
II. ENVIRONMENTAL, HEALTH AND SAFETY, QUALITY STANDARDS					
1. Environment	$40.0–$60.0		$10,400,000,000 per 3d annual report of Council on Environmental Quality, gross rather than net cost.	10.4	By 1975 it was $14,400,000,000 per 7th annual report, p. 145.
Except clean air, auto emmissions		6.0	The source cited by OMB concluded that auto emmissions controls were worth the costs or would be with revisions in the nitrogen oxides standards.	0	These costs are included in the environmental controls figures given above.
2. Safety:					
Automobile	.5	(1)	No comment	.5	GAO gives $2.9 for the 1973 model year see page 133 of this paper.
OSHA	3.5	(1)	do	3.5	
3. Quality standards: Food and drugs		.3–.4	Based on estimates of costs of 1962 amenements—should be 0.25 to 0.30, and this is just the net cost of the requirement that drugs be effective. GAO feels that the safety standards of FDA have a net positive effect.	0	
III. DIRECT COST					
1. Public sector:					
Federal	2.0	(1)	No comment	2.0	
State and local	(1)	(1)			
2. Private sector:					
Paperwork	[2] 1.0	(1)	No comment	1.0	
Other (Washington lawyers, etc.)	[3] 4.0–5.0	(1)	do	4.0–5.0	

[1] Not available.
[2] More than.
[3] Probably at least.

Source: See text.

covered in this study. For example, both the GAO and OMB reviews included international trade restrictions and state and local regulations.

Ralph Nader and Mark Green estimated the costs of traditional economic regulation as shown in table 3–6.[78] Unlike the OMB estimates, these are all net costs. Like the OMB estimates, they are based on academic studies. The estimated ICC cost is derived from work conducted by Thomas Moore.[79] which was strongly criticized by James R. Nelson on the grounds that it exaggerated the cost of ICC regulation.[80] The CAB-airlines estimate is based on Levine.[81] That article itself makes no estimate, merely describing the California intra-state market. The Nader and Green article apparently simply extrapolates intra-state fares to suggest what would prevail in other markets in the absence of the CAB. This may be correct, but the GAO considered it too crude because of varying cost conditions in other parts of the country. Recent reforms by the CAB appear to have lowered this cost, and implementation of the "Airline Deregulation Act of 1978" will further decrease it.

TABLE 3–6.—*Green and Nader estimates the cost of regulation*

Sector	*Economic waste from regulation (Billions)*
ICC: Increased costs and shifting traffic from low-cost to high-cost modes, involving railroads, trucks, and water carriers	$4 to 8.7
CAB: Trade associations and price fixing	2 to 4.0
FMC: Merchant marine price fixing	2 to 3.5
FCC: Additional value to consumers if FCC reallocated TV channels so as to permit 7 national networks rather than 3	8.0
Total	16 to 24.2

Source: Green and Nader, op. cit., p. 882.

The FMC estimate is also very uncertain. Its source [82] gives no reference nor any direct evidence for the estimate. It is not even clear that the estimate refers to FMC policies. A member of the committee that prepared the study said he thought the estimate referred to the cost of all transportation regulation, not just that of the FMC.[83]

Finally, the FCC figure is based on an estimate made by McGowan, Noll and Peck [84] of the value of four more networks to viewers based on the amounts cable subscribers are willing to pay for additional channels. It can be looked upon as the cost of the FCC's decision to try to assure as many communities as possible local stations, thus precluding seven very strong regional stations in all parts of the country which would have permitted seven networks. Alternatively, it can be viewed as the cost of the FCC's failure to shift all television stations to the UHF band, which contains 70 channels, and could have accommodated enough stations in each locality to permit seven networks. Neither is a realistic alternative today. What is an alternative is the further development of cable with the free importation of signals.

[78] Ralph Nader and Mark Green, "Economic Regulation vs. Competition: Uncle Sam the Monopoly Man," Yale Law Journal, April 1973, p. 882.

[79] Thomas Gale Moore, "Deregulating Surface Freight Transportation" in Almarin Phillips, Ed., Promoting Competition in Regulated Markets. Brookings, 1975, p. 71.

[80] James R. Nelson, "Regulation of Overland Movements of Freight" in Senate Government Operations Committee, Case studies of Federal Regulation, pp. 79–92.

[81] Michael E. Levine, "Air Transport Regulation," The Yale Law Journal, 1965, pp. 1416, 1447

[82] Maritime Transportation Research Board, "Legal Impediments to International Intermodal Transportation," National Academy of Sciences, 1971, p. 42.

[83] Telephone conversation with Cary Jack Pearce.

[84] John McGowan, Roger Noll and Merton J. Peck, "Subsidization Through Regulation: The Case of Commercial Television Broadcasting" in Joint Economic Committee, "The Economics of Federal Subsidy Programs Part 8—Selected Subsidies," July 29, 1974, p. 1055.

This could result in the leading independents in the largest cities being imported by cable systems throughout the country. They would take on the programming characteristics of additional networks. In another study Noll, Peck and McGowan estimate that nationwide coverage by cable systems that offered the three networks and four strong independents would be worth $3.5 billion to consumers. Since it would cost about $1.8 billion there would be a net gain of $1.7 billion.[85]

Altogether, the Green and Nader estimate is smaller than the OMB estimate because it leaves out all environmental, health and safety regulation, all State and local regulation, and all direct costs of regulation. The particular indirect cost estimates they use are all included in the OMB study except for the FMC estimate. The costs they cite are probably somewhat exaggerated, especially in the case of the ICC figures.

More recently, aggregative estimates were prepared by Murray Weidenbaum and his associates at the Center for the Study of American Business at Washington University, St. Louis.[86] A 1977 study by Robert De Fina, under the direction of Weidenbaum, estimated the administrative costs of regulation in 1976 at $3.2 billion and compliance cost of $62.3 billion for a total of $65.5 billion.[87] Table 3–7 shows a breakdown of these costs into six subject areas.

TABLE 3–7. ANNUAL COST OF FEDERAL REGULATION, BY AREA, 1976

[In millions of dollars]

Area	Administrative cost	Compliance cost	Total
Consumer safety and health	1,516	5,094	6,610
Job safety and working conditions	483	4,015	4,498
Energy and environment	612	7,760	8,372
Financial regulation	104	1,118	1,222
Industry specific	474	26,322	26,796
Paperwork	(1)	18,000	18,000
Total	3,189	62,309	65,498

[1] Included in other categories.

Source: DeFina, Robert, Public and Private Expenditures for Federal Regulation of Business. (Working paper No. 22.), St. Louis, Washington University Center for the Study of American Business, 1977, p. 3.

The data in this table are necessarily incomplete and of varying degrees of reliability. They are based on estimates, by different authorities made at various times, which DeFina converted to a 1976 base. For example, within the largest category (industry specific), the great bulk of total cost ($22.2 billion out of $26.8 billion) is attributed to regulation costs imposed by Interstate Commerce Commission and International Trade Commission activities. As discussed later in this report, the ICC cost estimates have been widely criticized for their reliability and the assumptions on which they were based. In addition, the In-

[85] Roger Noll, Merton J. Peck and John McGowan, "Economic Aspects of Television Regulation," Brookings, 1973, p. 171.

[86] The analysis of the Weidenbaum studies is drawn from Julius W. Allen, "Costs and Benefits of Federal Regulation: An Overview," Congressional Research Service, Library of Congress (July 19, 1978).

[87] DeFina, Robert, Public and Private Expenditures for Federal Regulation of Business, (Working Paper No. 22.) St. Louis, Washington University Center for the Study of American Business, November 1977, p. 3.

ternational Trade Commission figure is based on 1973 estimates of the cost of U.S. import quotas, converted to 1976 dollars. Whether the cost of import quotas should be included among the costs of regulation may be questioned. In addition, the estimated paperwork costs, which were based on a 1972 figure given by Senator Thomas J. McIntyre at the opening of Senate hearings on that subject, includes the cost of filing IRS and social security forms; and it is questionable whether such filings ought to be considered for regulatory purposes. Finally, DeFina had no available cost information for several regulatory agencies.

The DeFina statistics were a significant basis for Weidenbaum's estimates of the total cost of regulation for fiscal years 1977, 1978, and 1979. Weidenbaum sets the total costs of Federal regulation for fiscal year 1977 at $79.1 billion and for fiscal year 1979 at $102.7 billion.[88] These figures are based on part on applying the 1976 ratio of 1:20 between budgetary and the compliance cost to subsequent years, even though Weidenbaum recognizes that there is no assurance that larger budgets for federal regulatory agencies generate a constant multiplier effect on the private sector.[89] Nevertheless, he justifies the use of this multiplier by stating that "the analysis in the body of this report tends to show that the data used here for private sector regulatory costs are substantially underestimated".[90]

Other attempts to estimate the cost impact of Federal regulation have either been made, or are in the process of preparation. For example, in its June 1978 issue, Purchasing magazine suggested that the total cost of government regulation of business was about $121 billion for fiscal year 1978 and would increase at about 10 percent to a total of approximately $135 billion for fiscal year 1979. Over 70 percent of that latter figure, according to the magazine, represents business compliance costs with Federal regulations.[91]

In early 1978, the Business Roundtable retained the accounting firm of Arthur Andersen and Company to conduct a study to determine specific business costs of compliance with the regulations of certain Federal agencies. This year-long study, which does not involve review of the benefits of regulation, will perhaps be more systematic on the question of private sector regulatory costs. The study was restricted to consideration of EPA, OSHA, EEO, DOE, FTC and compliance under the Employment Retirement Income Security Act. Thus limited, the study will not provide an estimate of the total costs of regulation. However, the Roundtable findings will doubtless be considered relevant to that question. As the Roundtable has stated,

> The study has the potential to serve as an important reference point for public discussion of the costs of regulation and to stimulate the search for alternate ways of achieving agreed upon goals. Because data will be collected from a large number of companies, using an objective methodology consistently applied, the results of the study will have an impact greater than that possible with individual company studies. . . . These data will be useful in focusing public attention on the cost impact of specific regulations on a large number of companies.[92]

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[88] Murray L. Weidenbaum, "The Costs of Regulation of Business, a Study Prepared for . . . the Joint Economic Committee, Congress of the United States," April 10, 1978, (95th Congress, 2d Session. Joint Committee Print.) p. 4.
[89] Ibid., p. 4.
[90] Ibid., p. 4.
[91] Purchasing, June 7, 1978, p. 14.
[92] Arthur Anderson & Co., "Cost of Government Regulation Study for the Business Roundtable: Phase 1, Statement of Study Methodology," May 1978, p. 1–3.

At minimum, the costs developed by the Roundtable effort are likely to figure prominently in subsequent estimates of total regulatory expense. The results of the Roundtable study are anticipated in the near future.

In summary, available estimates of total costs are neither precise nor wholly reliable, and typically involve little systematic consideration of any consequential benefits of Federal regulation. Thus all too often, the public is informed sometimes dramatically of large costs imposed by regulatory activities, but without a similar effort to indicate the advantages gained for society through those requirements. As a result, general assertions on whether the burden is too great, or whether the expense far exceeds the benefits, should—on the basis of existing knowledge—be guarded and qualified. All the same, available statistics do demonstrate that Federal regulation in fact imposes large costs, even though the precise extent of that burden as well as the offsetting benefits are not as yet known. Recent passage of Federal airline deregulation and, if successful, initiatives to ease ICC trucking controls doubtless will have significant impact on that equation.

E. A Critique of an Agency's Attempt at Self-Evaluation: The Benefits and Costs of ICC Regulation of Rail and Truck Freight Transportation

Against the various costs of regulation must be considered the benefits. In general, benefit-cost analyses of economic regulation are scarce, but the ICC has attempted one such study on freight regulation.

1. The ICC's estimates of regulatory benefits

Table 3–8 lists the purported benefits. Those that are quantifiable seem to be quite large in aggregate, and the ICC lists many nonquantifiable benefits as well.

TABLE 3-8. PURPORTED BENEFITS OF ICC RESOLUTION

Benefits capable of quantification	Amount (billions)	Benefits incapable of quantification
Rate level:		
Motor	$3.740	Adequate rate and service levels to rural areas and small businesses without the need for direct subsidies.
Rail	(.500)	
Abandonment proceedings	.300	
Railcar utilization	.149	Stability of rate and service levels.
Carrier financing	.035	Enhanced market competition.
Inventory reductions	.059	Consumer and shipper assistance.
Loss and damage impact	.613	A more adequate and balanced car supply.
Total	4.496	Effects on national defense. Effects on capacity. Incentives for technological changes. Environment and conservation.

Source: ICC, Bureau of Economics, "A Cost and Benefit Evaluation of Surface Transportation Regulation," (Statement No. 76–1) undated, p. 28.

By far the largest "benefit" resulted from lower truck rates (partially offset by higher rail rates). This estimate was arrived at by noting that truck rates had risen only 41 percent from 1969 to 1975 while the wholesale price index rose by 64.2 percent during the same period.[93] It may well be true that during a period of accelerating inflation, regulation acts to delay price increases, but if so, the gain

[93] ICC, Bureau of Economics, A Cost and Benefit Evaluation of Surface Transport Regulation (Statement No. 76–1) undated, p. 23. During the same period, the Consumer Price Index rose by 46.8 percent and the GNP deflator rose by 46.7 percent. There is no obvious reason why the Wholesale Price Index should be used for this comparison.

would only be temporary, and it would not represent a reduction of costs to society but rather a transfer from trucking companies to consumers. (It should be noted, however, that rail rates rose 69.4 percent during the same period, somewhat faster than the wholesale price index). What seems more likely is that truck costs rose more slowly than prices generally during this period.[94] If so, there would be no gain at all for consumers relative to a competitive market, because in an unregulated competitive market prices would also reflect costs.

The next largest benefit claimed was $613 million in loss and damage settlements. This benefit is alleged to occur because the ICC makes the carrier responsible for damages to merchandise carried. If carriers were not liable for damages in the absence of regulation—something that is not true of the exempt sector now—then shippers would carry insurance. This is the estimated net cost of the insurance.[95] Where the carriers now buy insurance there is no reason to believe that insurance costs would be any higher to shippers than to them. Where the carriers self-insure they must incur many of the same costs as insurance companies do. This is clearly true of damage claims, but it also applies to the cost of investigating claims and of carrying liquid assets to cover claims. All these costs are now included in freight rates. If carriers were not liable, competitive freight rates would be lower by the amount of the saving. Shippers could pay insurance premiums out of the rate reduction. There is little reason to believe that the cost of covering damages would be higher if borne by the shipper rather than the carrier. Thus, this "benefit" does not stand up to scrutiny.

The third largest item is a $300 million cost to the public in railroad abandonments, that would occur absent ICC controls. This is an estimate of losses to business dependent on the abandoned branch lines. To some extent such losses would certainly occur, but they are not net losses to society. Offsetting that loss would be reduced costs to the railroads of the branch lines abandoned and possible increases in businesses elsewhere. Moreover, deregulation could be accompanied by arrangements under which local communities and/or shippers could subsidize branch lines.[96] Thus no branch abandonments need occur if the value to the community exceeds the operating deficit incurred by the railroad, and so the actual size of benefit, if any, attributable to regulation is quite unclear. And the effect may be to transfer income from railroads to branch line users—not a net social gain.

A fourth quantifiable benefit is $149 million that the ICC believes is saved by regulatory actions affecting rail car utilization. The agency estimates that the freight car service rules reduce the number of freight cars needed by 5 percent.[97] However, a recent study concludes

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[94] Truck labor cost rose by 60 percent and truck labor productivity rose by 12.1 percent during the same period so that unit labor cost rose by 48 percent. (W. Bruce Allen and Edward B. Hymson, "The Interstate Commerce Commission's Staff Analysis of the Costs and Benefits of Surface Transport Regulations," Council on Wage and Price Stability, Jan. 19, 1977, mimeographed, p. 22.

[95] The ICC arrived at $613 million by estimated insurance costs on the basis of marine insurance premiums paid by exporters of 15 cents per $100 valuation. Applying the same rates to domestic freight, the commission came up with $1.113 million in insurance premiums from which it subtracted actual damage claims of $500 million to reach $613 million. Ibid., p. 27. There is no reason why international marine insurance premiums should be the same as those applying to domestic shipments.

[96] Such a provision now exists in the Railroad Revitalization and Regulatory Act of 1976 (sec. 803).

[97] Ibid., p. 26.

that efficient freight car utilization has been inhibited by regulation.[98]

The ICC estimates that, by assuring small shipments to rural areas, local businesses are saved $59 million in additional inventory costs. Since trucks can at present effectively determine how much service should be supplied to rural areas, it is not at all clear that more service is offered under regulation than in its absence. Therefore, the benefit claimed may not exist.

Finally, the ICC estimates that regulatory controls reduce financing costs to common carriers by $35 million, by providing a more stable environment than would exist in the absence of regulation. The ICC probably does reduce risks of truckers, but the impact of that reduction on capital costs is probably not very significant, since most truck borrowing is through chattel mortgages where trucks or terminals serve as collateral. The lender thus has an assurance regardless of the business risk. Thus, the actual effect may be much below the ICC estimate.

Altogether, the ICC's quantifiable benefits seem vastly exaggerated by table 3–8. All of the purported benefits are open to question.

The nonquantifiable benefits are mixed. Some are plausible, such as "greater stability of rates and service" and perhaps, "consumer and shipper assistance." In the absence of the ICC and given extensive competition, frequent shippers would be protected against adverse treatment by carriers because of the carriers' concern for their good will. But infrequent shippers, such as households moving personal effects, might be at a disadvantage without ICC oversight. Other benefits are more questionable; for instance, "a more adequate and balanced car supply" and "adequate rate and service levels to rural areas and small businesses without direct subsidy" (except for the branch line abandonments where direct subsidy would seem preferable). Still others appear to be wrong. It is difficult to imagine how a system of enforced cartel rates and official barriers to entry results in "enhanced market competition" compared with a free market. Similarly, the most likely "effect on capacity" of the ICC's regulations is to induce excess capacity and thereby raise costs. And the "incentives for technical change" seem to be negative, if anything, going by past experience. Finally, it is difficult to conclude that ICC controls have done much, one way or another, in terms of "effects on national defense" or "environment and conservation". On balance, the nonquantifiable "benefits" are as often negative as positive and probably do not add much to the quantifiable benefits.

2. The ICC's estimates of regulatory costs

Against these benefits must be set the costs of ICC regulation. The direct costs include the ICC's $59.7 million budget and the costs incurred by the industry in dealing with the agency, which probably totals several times the agency's own budget. The carriers' regulatory costs alone probably amount to several hundred million dollars annually.

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[98] Association of American Railroads and Federal Rail Administration "Freight Car Clearing House Experiment, an Interim Evaluation" 1975, cited in Allen and Hymson, op. cit., p. 26.

Costs imposed on motor carriers in the form of empty backhauls, circuitous routes, and other forms of excess capacity must be added to those direct costs. The extent of that cost is uncertain but one experience with trucking deregulation, for frozen foods in the 1950's, resulted in rate reductions of over 20 percent. The ICC believes that experience is not a good indicator, because it was narrow in scope and is now more than 20 years out of date. The agency contends that, based on trucking deregulation in Britain, there would be a reduction of rates on truckload lots of about 10 percent, offset by 40-percent rate increases in less-than-truck load lots.[99] The ICC further argues that truckers do not have sufficient margin over costs (operating ratios) to absorb a 20-percent decrease in rates. This latter argument has uncertain applicability because the main source of lower rates would be reduced costs. Whether there is enough cost reduction potential to permit a large rate reduction if regulation were eliminated is an open question.

The recent decision to increase the size of "commercial zones" to the area 20 miles beyond the city limits for large cities may provide some current evidence. Rates and routes within the commercial zones are exempt from ICC regulation. It will be interesting to see how rates change within the expanded zones. Present shipper expectations seem to be that the change will result in a net reduction in freight costs and an improvement in service.[1] If so, the implication would seem to be that ICC regulation increases common carrier truck rates, probably by increasing truck costs.

Other indirect costs are discounted by the ICC. The agency believes that there would be no net gain for private truckers as a result of the elimination of empty backhauls, because "much (or all) of this change would likely represent a shift in empty backhauls to common carriers." [2] In effect, the Commission is arguing that the basic source of empty backhauls is imbalance of freight movements and that ICC regulation does nothing to increase them, merely affecting who experiences them. That assumption certainly is the most favorable possible for the ICC and it is most untimely to be valid.

Similarly, the ICC does not believe that there is any possible gain from shifts in traffic among modes. In particular, the Commission argues that rail rates would rise, not fall, if freight were deregulated, so that the railroads would not be able to win long-haul, high-value freight back from the trucks. Its argument is that the railroads have had ample opportunity to make net reductions in high freight rates on high-value goods, either directly or by not raising the relevant rates during recent general rate increases, and that the railroads have not generally done so and have continued to lose traffic to the trucks.[3] This argument seems generally convincing though evidence on it is mixed.

In general, the ICC concludes that the economic impact of its regulation ranges from a benefit of $4.8 billion to a cost of +$1.7 billion.[4] Of course both figures are based on certain assumption. The $1.7 billion "cost" estimate rests on an estimated 10-percent

[99] Ibid., p. 7.
[1] "Deregulation Hits the Urban Truckers", *Business Week*, Jan. 17, 1977, p. 24.
[2] Ibid., p. 9.
[3] Ibid., pp. 10–11.
[4] Ibid., p. 12.

increase in truck rates—and presumably costs—due to ICC regulation—an estimate that is based on a report that truckload rates fell by about 10 percent when trucks were deregulated in Britain in 1968. The $4.8 billion "benefit" estimate assumes that ICC regulation has reduced less-than-truckload (LTL) rates and costs by 40 percent from what they would be absent controls. And that, in turn, is based on a finding that some such rates increased about 40 percent in Britain following truck deregulation.

It is not clear how ICC actions serve to reduce LTL service costs so dramatically compared with what would exist without regulation. If all that the ICC does is to keep LTL rates down, the result is a transfer from truckers to shippers and not a net cost saving. Whether the ICC actually succeeds in keeping LTL rates at 60 percent of what they would be in the absence of regulation is most uncertain in view of the agency's very passive stance with respect to rates.[5] Also, the British experience may not be fully relevant to the United States because of differences in the institutional arrangements that preceded deregulation there.

The ICC does not show any indirect costs of regulation in connection with the railroads at all. This seems very unlikely in view of the repeated requests to abandon branch lines and the large excess capacity in that industry.

Altogether, the benefits from ICC regulation are slight, but neither are the costs as great as some observers believe. It seems certain that the ICC imposes some costs over and above the direct costs of regulation. One message may be that agencies such as the ICC cannot be expected to produce objective analyses of their own operations.

F. A Concluding Overview

Where the alternative to controls is unregulated monopoly, the presumed benefits from controls are prices closer to costs of production and improved resource allocation. Since Federal regulatory agencies often deal with industries that would be generally competitive in the absence of regulation, those benefits are largely inapplicable. This is true of freight transportation, airlines, milk, gas, and oil. Regulation probably raises prices in freight, airlines, and milk, so that its net effect is to impose a cost on society rather than the reverse. In gas and oil, prices are reduced below competitive levels (given the high prices imposed by the international oil cartel), and this also imposes costs on society. In other areas, Federal regulation does nothing to lower prices. This is true of broadcasting, banking, and food and drugs.

The main areas where Federal regulation concerns rates of monopolists are natural gas pipelines and long-lines telephones.[6]

In the case of natural gas pipelines, a recent study carefully examined allowed rates of return and compared rates charged in gas distribution companies (which are controlled) with those charged in di-

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[5] During fiscal 1974, 236,907 motor carrier tariffs, were filed with the ICC. Of these, 3,205 or 1.24 percent were considered for suspension, and 1,521 or 0.59 percent were actually suspended in whole or in part. Nelson, p. 32 .This sort of evidence is often presented to show that the ICC does not actually control rates very much.

[6] This is much more common in State or local regulations where local electric, gas, telephone, water, and cable TV companies are mostly monopolists. This discussion is not primarily concerned with State and local regulation, however.

rect sales to industrial customers (which are not controlled). Its conclusions were that "* * * realized profits were much greater than estimated costs of capital for the pipeline companies" and that "the actual transactions prices on regulated sales apparently did not differ consistently from those on unregulated sales, if account is taken of variations in costs of transmission and in demand for natural gas." In general, it was concluded that "* * * the value of Federal Power Commission price-setting activities has been either very low or zero." [7]

In the case of long-distance telephone service rates were repeatedly reduced during the 1950's and 1960's and at least one economist interprets this and related experience as evidence that FCC regulation was effective in lowering consumer costs.[8] Even so, the rates have apparently been high compared to the costs of providing the service; and more recently rates have been increasing, along with most other prices. One reason for that disparity is that a disproportionate share of the rate has been assigned to interstate long-distance service.[9] The implication is that long-lines rates have not fallen as fast as marginal costs. Thus, it is difficult to draw a definite conclusion about the extent to which the FCC has reduced long-distance rates relative to costs.

In general, the picture of the regulatory commission reducing monopolists' rates to marginal cost does not fit the Federal agencies very well. In most cases it is irrelevant, and where it does apply, the gains to consumers are questionable.

There are other benefits from regulation. These might include the prevention of destructive competition, recognition of externalities, and the assurance of service to small communities.

As discussed earlier, the fear of destructive competition seems misplaced with the possible exception of the railroads on competitive routes. Industries such as airlines and trucking do not have the characteristics likely to result in destructive competition short of a major depression.

The important benefits from most regulation dealing with externalities have already been discussed in connection with EPA and OSHA. Another area where such indirect effects are important is banking. There can be no doubt that widespread bank failures would impose large costs on society over and above the losses to bank stockholders. But whether control over entry and maximum interest rates on deposits, presently exercised by Federal and State agencies, is therefore necessary is an open question. Such controls are justified in part as preventative against bank failures. However, the main protection against such events is the Federal Deposit Insurance Corporation, which assures depositors in the event of bank failure and greatly reduces the danger of a run on banks. In addition, the member banks experiencing difficulty would be able to borrow from the Federal Reserve System. So, too, the bank examination functions of various agencies would still monitor and police banking operations to prevent undue risk to depositors. Due to those protections, it is not at all clear that en-

[7] All three quotations are from Stephen G. Breyer and Paul W. MacAvoy, "Energy Regulation by the Federal Power Commission," Brookings, 1974, p. 54.
[8] Alfred E. Kahn, "Economics of Regulations," vol. II, pp. 100 and 110.
[9] Richard Gabel, "Development of Separations Principles in the Telephone Industry," Michigan State University, 1967, p. 128.

try restrictions and deposit interest rate controls are necessary to avoid wholesale bank failures.

Finally, the assurance of service to small communities is an intended benefit of regulation in a number of areas. As pointed out earlier, it is doubtful whether there is much or any such cross subsidization of thin routes by the trunk airlines or the common carriers truckers. This leaves the railroads which clearly do provide unprofitable service on many branch lines that they have attempted to abandon, and long lines interstate telephone service which appears to charge according to distance rather than density of the route. Whether this cross subsidization is worth the many costs of regulation is a matter of judgment.

Chapter Four

REGULATORY OPTIONS FOR REFORM

Recently, regulatory reform has become identified with deregulation—with movements toward an unfettered market. There are, as previously discussed, a number of areas in which deregulation could yield substantial benefits. Yet free-market solutions vary widely depending on the sector and the nature of the problems involved. For example, many experts favor free-market pricing of airline services, but few if any would endorse a complete laissez faire policy toward airline safety. Chapter Two of this report explored the reasons for the widely varied desirability of unfettered market operation, and showed that regulation or other intervention may be appropriate in a number of situations. This chapter and Chapter Five will consider the options available for reforming regulatory controls.

From the outset, it is important to distinguish between economic regulation concerned with prices, entry, and rates of return and regulation concerned with questions of safety, health and environmental protection. As previously discussed, possible market failures in these noneconomic areas may be more fundamental than in the areas of present economic regulation. Certainly the issues of equity of the former are more striking: safety, health, and environmental regulation must often deal directly with questions of life and death. In economic regulation, major concerns are monopoly, discrimination, possible unfair business practices, escalated costs and denials of service. While the underlying issues are different, this chapter will pose similar questions about economic regulation and about safety, health, and environmental regulation: what are the alternative ways of achieving social goals? What are their relative costs, benefits, and effects on economic flexibility and progress? What are their major redistributional effects?

A. Evaluation of Regulatory Alternatives: Principles and the Role of Regulatory Impact Analysis

This report has already addressed the vital first step in regulatory review—determining the justification for regulation and its appropriateness. That involved identifying the purpose of regulation, whether it is to correct some market failures, such as monopoly pricing, or to further some other social purpose, such as lower rates to small communities. In that regard, it is particularly important to determine whether the conditions perceived as justifying intervention presently exist and how they are likely to change in the future. Conditions may have change—as in the transportation industries, where railroad market power is much narrower in scope than when the ICC was established—and the full scope of present regulation may no longer be needed. New information can also mandate changes in regulatory

approach and policy.[1] In addition, social and economic changes may alter the appropriate form and degree of regulation, all of which suggests the need for systematic reappraisal of the need for regulation, as affected by changed circumstances.

More widespread affluence and rapid technological change have increased consumer demands for both quality and protection. Legal and social changes have heightened social concern for the protection of particularly vulnerable groups. This, too, raises the demand for protection, even though some groups decry the perceived costs.

Federal regulatory actions are frequently subject to conflicting pressures, since controls will have positive and negative effects on various interests and values. Thus careful evaluation of the effects of current and proposed regulation is suggested. The example of trucking regulation illustrates the contribution that can be made to decisionmaking by economic impact analysis. For example, one purported rationale for airline regulation, and argument against deregulation, is the preservation of service to small communities. That objective raises several questions. First, does current regulation, in fact, improve service to small communities? Second, is it desirable to assure provision of more or better service to such communities than would be provided by the market? Finally, assuming that the answers to those questions are "yes," is regulation the most effective, least costly means to provide this service? The first and third questions can be addressed by economic impact analysis. Congress must answer the second question, and this related one: If, in fact, current regulation does improve service to small communities, but on balance the effects are negative, what if anything should be considered in its place?

Thus, most regulatory decisions involve more than a weighing of economic benefits and costs, but also consideration of effects on particular groups in society. Careful regulatory impact analysis can be a valuable aid to this process: Impacts must be identified and quantified and causal links established. As such, impact analysis can be important not only for the resulting information, but also for the overview of impacts and interrelationships which it can provide.

The need for careful appraisal and impact evaluation is increased by the complexity of regulatory tasks and the forces which can divert regulators away from attainment of congressional goals, and toward protection of regulated interests or pursuit of administrative convenience. Impact evaluation consists of definition and, to the extent feasible, quantification of effects. Much health, safety, and environmental regulation must be concerned with the decisions of many thousands or even millions of firms and businesses in dozens of industries. OSHA has jurisdiction over about 5 million workplaces; EPA must be concerned with millions of stationary pollution sources and

[1] Evaluation of regulation must distinguish between bad decisions and bad outcomes. It may be that, at the time that regulation was instituted and designed, the decision appeared to be correct. Regulation may have seemed the best way to deal with an apparent market failure or to achieve some other social purpose. Those evaluating regulation from the present have the benefit of hindsight: they know how, in fact, regulation has worked, and how technology and society have changed. Criticism of regulation because of undesirable results should not necessarily be construed as criticism of Congress or of regulators. Congress cannot enact legislation with the benefit of perfect foresight. And regulators may have been doing their best to implement mandates which might have been more clearly stated or which, over time, have become inappropriate.

tens of millions of mobile sources, particularly private automobiles. By contrast, the traditional economic regulatory agencies typically deal with one or a few sectors of the economy. Even here it may be difficult to acquire adequate knowledge properly to regulate individual firms. All the same, a relatively concentrated industry, such as airlines, presents a more tractable task than, for example, the fragmented motor carrier industry.

On the other hand, many health, safety, and environmental regulators have broad jurisdictions over all or most industries, and cannot hope to gain detailed industry knowledge and understanding.[2] The technical complexity and diversity of subject matter may effectively deprive politically responsible regulators of independent judgment. Impact evaluation which quantifies the quantifiable, enumerates and places bounds on nonquantifiable effects, and clearly indicates the range of uncertainties, can assist in more effective decisionmaking. That kind of analysis is also very useful to agencies responsible for regulating one or a few business sectors. Those agencies arguably are more subject to "capture" by special interests. Publicly available impact evaluation can help counter that tendency.

Therefore, the most useful form of impact analysis may stop short of attempting to quantify and compare all effects. Rather, analyses could quantify the quantifiable, and enumerate and place bounds upon other effects. Analysts could compare the effects of alternative methods of achieving goals, and responsible policymakers could use the information in making decisions.

Impact analyses can help Congress evaluate the strategies being followed by regulators. And, importantly, they can provide some accounting for the use of the Nation's resources represented by the "cost of regulation." Such costs, though by some to be "borne by business," are generally and ultimatrly paid by the public. Unlike Federal expenditures these appropriations of society's resources are not reviewed by Congress in the budgetary process, and no accounting is presented to the public. But, as pointed out previously, these nonbudgetary costs of regulation typically far outweigh agency appropriations.

1. Requiring regulatory impact statements

Up until very recently, appraisal of the economic impact of proposed Federal actions was conducted in an informal and casual fashion, if at all. There was no government-wide requirement that departments and agencies systematically review and analyze potential costs, benefits and alternatives.

In November 1974, prompted principally by a concern that Federal regulation significantly contributed to inflation, then President Ford promulgated Executive Order 11821.[3] That Order, as implemented, required departments and agencies to complete an Inflation Impact Statement (IIS) for all proposals that were considered "major" in terms of economic effect. The program covered only new regulations and legislation proposed by the agencies, and had no applicability to existing laws. For "major" regulations, agencies were to complete the analysis of costs, benefits, and alternatives before publication of the

[2] Agencies such as NHTSA and FDA deal with a narrower range of problems and so may gain more expertise.

[3] Executive Order No. 11821, November 27, 1974. The Order was implemented by OMB Circular A–107, January 28, 1975.

proposal in the Federal Register. If, after consideration of available alternatives, the costs identified in the IIS analysis exceeded the projected benefits, the proposal would be classed as "inflationary"; conversely, if benefits were greater than costs, the action would be considered "non-inflationary." [4]

As implemented, the monitoring responsibilities for the program were divided between the Office of Management and Budget and the Council on Wage and Price Stability: OMB was granted overall responsibility as well as specific review of legislative IISs; COWPS primarily evaluated Inflation Impact Statements on proposel rules and regulations. Although scheduled to expire in December 1976 the Executive Order was extended by President Carter for the year 1977.[5]

In late 1976, shortly before its first expiration date, a review of the program was conducted by the staffs of OMB and COWPS.[6] That report indicated a mixed record of accomplishment: few IIS's were actually prepared, and those by only a small number of agencies; the impact of the program on the quality of regulatory decision-making was at best uncertain; and enforcement efforts were something less than vigorous.

For example, as of December 1976, a total of 49 IISs had been submitted by only nine of the 25 agencies subject to the Order. The vast majority of completed IISs were for proposed regulations rather than agency-initiated legislation.[7] Although noting that the quality of IISs had improved with the passage of time, the appraisal concluded that the "analysis of costs is consistently more adequate than the analysis of benefits, and the analysis of alternatives usually is quite skimpy and often not even attempted." [8] As previously noted the determination of "major," which triggered the IIS requirement, was a critically important feature of the program. Yet, according to the report, that finding was not reached on a very systematic basis, and instead "usually involves only a casual appraisal of the total costs anticipated." [9] On the extent to which the IIS program affected regulatory decisions, the report indicated that the analysis was "not apt to be an important input in the proposal's development." [10] Rather, if any impact occurred at all, it was likely to occur in modifications before preliminary announcement and final promulgation. That was particularly true in those cases where the IIS was prepared outside the agency which developed the proposal.

The IIS program also had major enforcement problems. As previously noted, only about a third of the covered agencies actually prepared such reports over a two-year period; a few agencies appear to have ignored the requirement altogether; and the independent regulatory commissions took the position that the President could not by Executive Order compel them to conduct such appraisals. In response, OMB neither conceded nor formally contested the argument on agency independence, and consequently many of those commissions did not

[4] *Ibid.*
[5] Executive Order No. 11949.
[6] "An Evaluation of the Inflation Impact Statement Program," prepared for the Economic Policy Board by the staff of the Council on Wage and Price Stability and the Office of Management and Budget, December 7, 1976. (Hereafter: CWPS-OMB Study.)
[7] Ibid., pp. 33–34.
[8] Ibid., p. iii.
[9] Ibid., p. 40.
[10] Ibid., p. 41.

fully comply with the terms of the Order.[11] Moreover it does not appear that either OMB or CWPS assumed a very enthusiastic oversight role: the report found that neither agency's performance in this regard was "completely satisfactory." [12]

Notwithstanding the admitted deficiencies of the "fledgling" program, the report did not suggest that the IIS program be abandoned. The report was instead convinced of the importance of such analyses, on the theory that "if the public sector is to promote economic efficiency, agencies must be held accountable for the economic impacts of their decisions." It was recommended that the program be retained and strengthened.[13]

And that is the course that President Carter adopted in March 1978, with the issuance of Executive Order 12044.[14] Insofar as the Order pertains to economic impact review, it is a decided improvement over the previous program. In scope and focus, the new Order is more refined: the IIS was too often viewed as just another requirement that had to be met before final issuance, and thus was not an integral part of the decision-making itself. So too its scope was, by the terms of the Order, limited to costs and cost-related effects. Under the new Order earlier consideration of a more expansive economic analysis is required.

The Order provides that, in accord with certain established standards, regulations with "major economic consequences" would be subject to regulatory analyses, including:

> . . . a succinct statement of the problem; a description of the major alternative ways of dealing with the problem that were considered by the agency; an analysis of the economic circumstances of each of these alternatives; and a detailed explanation of the reasons for choosing one alternative over the other.[15]

Guidance is provided on the nature of criteria and procedures to be established by the various agencies. For example, analysis is required for any regulation that has an annual effect on the economy of $100 million or more, or that involves "major increase in costs or prices for individual industries, levels of government, or geographic regions . . ." [16]

The new Executive Order is far more systematic than its predecessor: timetables are established, and general standards set; opportunity for public comment is guaranteed; and both criteria and procedures, set by Executive Branch agencies, must be approved by the Office of Management and Budget. Moreover, President Carter's program states the general requirement in broader terms, thus allowing for consideration of various kinds of impact not necessarily reducible to dollar and cent values. In express terms, OMB has overall responsibility for the program. In addition, prior to final issuance, agency appraisals are selectively evaluated by the Regulatory Analysis Review Group, headed by the Council of Economic Advisers with analytical staff support provided by the Council on Wage and Price Stability. That

[11] Ibid., pp. 73–76. On the issue of applicability to the independent commissions, the Order was on its face confusing: while it required "'(e)ach Federal department and agency" to "cooperate" with the OMB Director, the Order also stated that proposals by "any executive branch-agency" must be accompanied by a statement certifying that such analysis had been completed. Executive Order No. 11821, sec. 1 and 4.

[12] Ibid., p. iv.

[13] Ibid., pp. 76–84.

[14] Executive Order No. 12044, March 23, 1978.

[15] Ibid., sec. 3(b)(1).

[16] Ibid., sec. 3(a).

attention focuses on those regulatory analyses which appear adequate or which present potentially significant consequences or concerns.[17] In an effort to insure meaningful consideration, the Order requires "careful examination of alternative approaches early in the decision-making process." [18] Existing as well as new, proposed regulations are included in the review requirements; however legislative proposals originating with the agencies are omitted from the Order.

The stated objective of the Order is to improve the quality of regulatory practices. That aim might not be assisted by the undue delay that can result from protracted litigation. Thus the Order relies for enforcement on OMB rather than the courts, and expressly states that it was not intended to "provide new grounds for judicial review." [19] Although some uncertainty exists, it appears as though the provision will be successful in this regard. The Eighth Circuit has held that the previous Executive Order, which contained no such express limitation, did not confer a private right of action to challenge the sufficiency of agency compliance.[20] In that case, the Order was viewed "primarily as a managerial tool for implementing the President's personal economic policies and not as a legal framework enforceable by private civil action." [21] The court also recognized that to infer such a right could potentially "paralyze the rulemaking functions of federal administrative agencies." [22]

The issue of independence of the regulatory commissions, which we have discussed in volume V of our study,[23] was directly addressed during consideration of the new Order. Comments were specifically solicited on whether the Order should or could be applied to those commissions.[24] In that regard, there are significant legal obstacles and, in our opinion, the President cannot absent express statutory authorization impose such requirements on independent regulatory commissions.[25] The President concurred, stating that commission "independence should be preserved." and decided that the Order should not be applicable to those bodies.[26] However, the President did request voluntary compliance and it appears that the independent commissions have been forthcoming in that regard.[27]

Like its forerunner, Executive Order 12044 has a life of two years, and will expire in June 1980 unless extended by the President. It would be premature to now predict the program's success. However, it appears that the effort to compel careful consideration of economic consequences does have enthusiastic Administration support. In signing the Order, the President remarked: "I will personally be involved in assuring that the Executive Order is carried out. And under me, the

[17] "Procedures of the Regulatory Analysis Review Group" and "Regulatory Analysis" (1978), working papers provided by CWPS.
[18] Executive Order No. 12044, sec. 3.
[19] *Ibid.*, sec. 7.
[20] *Independent Meat Packers Association* v. *Butz*, 526 F. 2d 228 (8 Cir. 1975), cert. denied, 96 S. Ct. 1461. Cf. *Independent Meat Packers* v. *Butz*, 395 F. Supp. 923 (D. Neb. 1975).
[21] *Independent Meat Packers*, supra, at 326.
[22] Id.
[23] See Committee on Governmental Affairs, Study on Federal Regulation, vol. V, 95th Cong., 2d sess., pp. 25–81 (1978). For discussion of the "independence" issue, as related to the Executive Order, see *Congressional Record*, April 5, 1978, pp. S 4862–66.
[24] *Federal Register*, Nov. 18, 1977, p. 59741.
[25] *Ibid.*
[26] *Congressional Record*, April 5, 1978, p. S. 4865.
[27] Information provided by OMB indicates that tentative conclusion.

Office of Management and Budget will be working very closely with the heads of agencies and departments to insure that the spirit and the letter of the Executive Order is honored." [28]

When he signed the Order, President Carter expressed his hope that the departments and agencies would view its terms as minimum standards, and that some "might want to go even further." And that has occurred to some extent. For example, the Department of Agriculture published for comment a tentative program that appears to be more far-reaching than that required by Executive Order 12044.[29] To illustrate, the USDA process would be applicable to all "significant" policies, regulations, and program-related actions, including major legislative, regulatory, or rulemaking initiatives as well as certain authorizations and policy proposals. Moreover, the Department has suggested a more comprehensive approach to the analysis. First, the Impact Analysis will—

> . . . cover impacts on the economic and social well-being of our society including differential effects on the costs and welfare of various sectors . . . such as farmers, consumers, industries, governments, minority groups, environmental interests, small businesses, and other commercial and financial enterprises.

Moreover, the USDA process establishes a relationship between the Impact Analysis and various other evaluations required by law or regulation. As proposed by the Department, the regulation states that Impact Analysis, "where appropriate or feasible," may include information requested by, or substituted for, Consumer Impact Statements, Civil Rights Impact Analysis, Regulatory Impact Evaluation, Pesticide Impact Assessments, Options Papers, and others. A similar relationship is established between the Impact Analysis and Environmental Impact Statements. Thus the proposed USDA regulation represents a more comprehensive approach toward implementing the Department's stated philosophy that, "all decisions, whether major or minor, can be made with confidence after an appraisal has been made of the impact of each alternative course of action which could be taken to reach the stated objective."

Concerning Presidential implementation of the Executive order, several important developments have occurred. First the President established by directive the Regulatory Analysis Review Group (RARG) to periodically review selected regulatory analyses prepared by the agencies. RARG is chaired by the Council on Economic Advisers with its membership drawn principally from the executive departments and offices. Analytical staff support is provided by the Council on Wage and Price Stability. The review group has established procedures for determining the basis upon which analyses are selected for appraisal as well as specific criteria that should be met by the agencies in preparing impact statements.[29a] In addition, in October 1978, the President created by directive the Regulatory Council to "develop a unified calendar of major regulation." The council is composed of executive branch agencies and departments, and has a chairman selected by the President; independent commissions are encouraged to voluntarily participate in the work of the council.[29b] Like the

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[28] Loc. cit.
[29] See Federal Register, May 21, 1978, pp. 21986–89.
[29a] RARG, "Procedures of the Regulatory Analysis Review Group," copy provided to the committee. CF. *National Journal*, Aug. 12, 1978, pp. 1281–1285.
[29b] "White Paper: The President's Anti-Inflation Program," October 24, 1978.

Executive order, it would be premature to predict at this time the impact of either the Regulatory Council or the Review Group in improving Government regulations. However, by implication, both suggest an important issue: the extent to which the President can properly affect agency decisionmaking. This very significant question needs to be addressed by Congress.

2. *Consideration in the development of a statutory requirement for regulatory impact analysis.*

Economic impact analysis, which evaluates the costs, benefits and alternatives of proposed actions, should play an important role in regulatory decision-making.

Careful economic analysis of the known aspects of a proposed action is an obviously sensible course. It is logical and reasonable to estimate costs, project benefits and consider alternatives before making any significant decision. In that sense, careful evaluation is a useful tool in careful planning and priority setting. In addition, such analysis can make a significant contribution to determining whether the conditions perceived as justifying intervention presently exist and how they are likely to change in the future. Also economic evaluations can help Congress, the President and the public assess the strategies adopted by regulators. And, importantly, they could provide some public accounting for the use of the Nation's resources, as represented by the "cost of regulation." Finally, impact analysis will produce hopefully reliable information on the burdens imposed by regulation.

As mentioned previously, in the context of deregulation, there are two major forms of Federal regulation: economic regulation which is concerned with prices, entry, and rates of return; and controls to safeguard the public health, safety and environment.

The distinction between economic and non-economic regulation is significant to consideration of impact analysis in regulatory decisions. Such analysis may be more easily applied in the economic area, since there the consequences are more generally capable of being reduced to dollar and cents terms. That is not the case with health, safety and environmental regulation. It is extremely difficult to quantify benefits in these areas, since they often become apparent only with the passage of time. In addition, some important benefits—such as recreational or aesthetic values—are difficult if not impossible to quantify in any meaningful way. Finally, there is the question of how the value of risks of human life, injury and suffering are computed. At present, there is no generally accepted method for evaluating such risks.

Therefore, there are serious limitations to the use of such analysis in the health and safety area. Certainly the decisions on whether to issue a regulation in these areas cannot turn exclusively on a cost-benefit or cost-effectiveness finding. Much more is involved, and decision-making to protect the public from serious hazards should not be reduced to those terms.

However, despite the difficulty of making such estimations, it is essential to have more information on the costs—and indeed the benefits—of Federal health, safety and environmental activities. Also the means used to achieve statutory goals should be the most efficient and least costly available. One role for such economic analysis, even

in sensitive areas of safety and health, can be to insure that society achieves the maximum amount of protection in light of available resources. Regulatory decisions cannot and should not turn on cost considerations alone, but analysis can help to insure that desired degrees of protection are attained at the minimum possible cost.

Today it is clear that Federal resources in those areas are committed on a massive scale without proper knowledge of the costs and consequences of those actions. For example, in 1975 the Council on Environmental Quality made a major effort to quantify costs and benefits of Federal environmental protection programs. Although several figures were advanced, the Council noted its dissatisfaction with the lack of definite knowledge: "It is disturbing to remain in such a state of ignorance about the various costs and benefits associated with programs to safeguard the environment. Although as a nation we are committed to large expenditures, we do not know whether we are spending too much or too little." [30]

More needs to be done in this area. A statute is necessary in order to establish a regulatory impact analysis requirement for rulemakings considered by all departments and agencies of the Federal government. In considering such legislation, four basic points should be kept in mind—

First, while agencies should be required to consider costs, benefits and alternatives, impact analysis must not be considered a final determinant of whether an action should be taken. The difficulty of quantifying benefits and the appropriateness of applying statistical analysis to areas of human welfare must be recognized. Also some benefits as well as costs may be expressed, as part of the impact analysis, in other than dollar terms. Thus, a regulatory action may be taken even though the projected costs exceed the quantifiable benefits.

Second, there is the problem of bias. Experience shows that there is a tendency for agencies to overstate the benefits, and for the regulated industries to inflate the costs. In this regard, it is illuminating to consider the various cost estimates on OSHA's proposed standard for occupational exposure to vinyl chloride. Several cost estimates were made before the standard was promulgated. An industry-sponsored study estimated a loss of domestic production of $65 to $90 billion, combined with massive plant shutdowns.[31] A study sponsored by the Department of Labor predicted much less disastrous consequences, with costs to user industries of about $382 million. A follow-up study, performed after implementation of the standard, found costs of about $325 to $335 million, and much more moderate effects on prices and production than industry had predicted.[32]

Third, care should also be taken to avoid a complex and elaborate economic impact evaluation process. Such a process could add to—rather than reduce—the costs of regulation by injecting additional expense, delays, and confusion into the system. For example, agency actions could be stalled for years in the courts if litigation challenging the adequacy of economic evaluations were permitted. Such delays

[30] U.S. Council on Environmental Quality. Environmental Quality, the Sixth Annual Report of the Council on Environmental Quality, December 1975, p. 496.
[31] Reported in M. J. Bolle, "Cost-Benefit for OSHA Standards: Use and Misuse," Congressional Research Service paper prepared for Committee use, Nov. 9, 1976, p. 27.
[32] Ibid.

have marked government action involving environmental impact statements, which have often been the subject of protracted litigation. Also, wasteful duplication can be avoided by allowing the economic evaluation statement to either incorporate or substitute for other kinds of impact statements required by law.

Fourth, impact analysis requires considerable expertise and judgment. Therefore, the analysis should be conducted within the department or agency which is considering the proposed action. The adequacy and objectivity of such analyses can be insured through Congressional oversight and by periodic review and appraisal of impact statements outside the agency.

Those important considerations should be reflected in any proposal to establish a regulatory impact requirement by statute. On the other hand, we believe that the regulatory process should, on a formal basis, take greater account of economic impact of proposed regulations and rules. Such analysis is, in our opinion, essential to an informed and effective decision-making process. Thus, we propose the following:

(1) All Federal regulatory agencies should be required to systematically consider regulatory impact including costs, benefits, and alternatives, before final issuance of significant proposed rules and regulations.

(2) Regulatory impact analysis should involve a two-step process, First, when regulations are initially published for public comment, Federal agencies would release a draft impact analysis containing the following information: (a) a succinct statement of the need for, and objectives of, the contemplated action; (b) a description of no fewer than three possible alternatives to accomplish the stated objectives and (c) for each of those alternatives, a preliminary statement of the economic and other consequences, and an appraisal of the effectiveness of each alternative in meeting the stated objectives. A reasonable period of time should be allowed for public comment on the draft analysis. Thereafter, when such rules or regulations are issued, Federal agencies should publish a final regulatory impact analysis, containing the following information: (a) a succinct statement of the need for, and the objectives of, the proposed action; (b) a description of the alternatives considered, and a statement of the reasons for selecting one alternative over the others; (c) an analysis of the economic or other consequences that may result from the proposed action; and (d) a summary of the comments by the public on the draft economic impact analysis.

(3) In order to avoid unnecessary duplication or wasteful use of resources, closely related sets of regulations should be considered together for the purposes of a regulatory impact analysis. Also, an impact analysis should whenever appropriate either incorporate, or substitute for, any other impact statement or analysis which may be required by law.

(4) A waiver of the requirement should be allowed, if a written determination is issued and signed by the head of an agency, certifying that the action is taken in response to an emergency situation, or is governed by short-term statutory or judicial deadlines. That certification should be published in the Federal Register. The waiver certification should not be subject to judicial review.

(5) Congress should assume responsibility for actively overseeing agency compliance with this statute. A selected number of economic impact statements should be subject to periodic review outside the agencies proposing regulations. In that regard, Congress may wish to utilize its own support agencies, such as the Congressional Budget Office and the General Accounting Office. The findings of such reviews should be reported to the public, Congress and the agencies involved. Also, as we discuss in chapter 7, a revitalized Administrative Conference should provide guidance and monitor agency compliance with this statute. Finally, as we recommend in volume V of our study,[32a] the President should be given a formal opportunity to make on-the-record comments and presentations to the agencies during the rule-making process.

(6) Procedures and findings in connection with any specific economic impact analysis would not be subject to any judicial review. Judicial review would, of course, continue to be available for the agency regulation which is the subject of the analyses.

3. The importance of considering alternative strategies for intervention: An example from OSHA's experience

A recent controversy involving a proposed OSHA standard illustrates the importance of impact analyses which move beyond benefit-cost enumeration to the more important task of evaluating alternatives.

Health and safety standards should focus on factors which in fact cause risks. Since compliance costs can be large, and may even result in plant shutdowns and unemployment, it is also important that standards specify compliance methods only to the extent needed to assure effective compliance and enforcement.[33] These issues are well illustrated by OSHA's proposed standard for occupational exposure to inorganic lead.[34]

The proposed standard would have limited lead content in workplace air to no more than 100 micrograms per cubic meter, based on an 8-hour average day and assuming a 40-hour work week.[35] The proposed standard appeared salutory, since "lead poisoning usually results from the inhalation of lead dust or fumes."[36] Under the proposed regulation, somewhat lower air lead levels would trigger special monitoring of both lead in the air and worker exposure as measured by blood lead levels.[37] Although worker injury occurs largely through lead in the blood, enforcement and compliance procedures would be dependent on "excessive" levels in the air. Yet, are atmospheric lead

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[32a] See Study on Federal Regulation, vol. V, pp. 76–78.

[33] Briefly, specification standards define allowable technologies, such as training or equipment design. Performance standards state allowable outcomes, such as pollution levels. As noted there, in many cases performance standards (or incentives) may in principle be more cost effective than specification standards which specify methods of compliance. Performance standards do allow more room for innovation. However, the potential ease of monitoring compliance with specification standards could shift the balance. It is important that the choice of specification standards be based on benefits to society, and not only on pure administrative convenience. In some cases, of course, easing administrative problems may allow better enforcement and more complete economic achievement of regulatory goals. There is some danger that agency choice of standards will be based too much on convenience and too little on broader considerations of effectiveness or cost.

[34] 40 F.R. 45934, et seq. (1975). This discussion is presented for illustrative purposes only and does not represent committee policy.

[35] 40 F.R. 45934 (1975).

[36] Nicholas A. Ashford, "Crisis in the Workplace: Occupational Disease and Injury," (MIT Press, Cambridge, 1976), p. 78.

[37] 40 F.R. 45943 (1975).

levels a good indicator of likely injury to workers from increased blood lead? And, could changes in work practices, worker rotation, or other methods yield acceptable safety conditions for workers, even where air lead levels exceeded the proposed standards?

It is possible that workers who, for example, tapped cigarettes on lead-contaminated benches or machines, could develop high blood lead levels even though air lead was very low. In some plants air lead might be in particles of sizes not easily absorbed by the body; the opposite is also possible. Some workers, such as those living in cities with some degree of lead in the water supply, might develop dangerous blood-lead levels even where workplace air lead was extremely low.

This suggests that a standard based on blood lead levels might in some cases provide better protection. On the other hand, it may be easier for inspectors to monitor air lead; such monitoring may involve less interference with worker privacy and allow lower monitoring costs. Finally, it might be argued that since air lead levels are more directly under employer control than blood lead levels, it is more reasonable to use an air lead standard. However, the Lead Industries Association proposed that violation of a blood-lead standard should trigger special monitoring, enforcement and compliance activities.[38] As noted above, such a standard might in some cases provide superior protection, albeit with possible enforcement problems.[39]

A standard based on air lead implies the appropriate corrective action: Reduce the concentration of lead in the air. The OSHA proposal would require that this be done "* * * solely by means of engineering controls, supplemented when necessary by work practice controls." [40] Ventilation would be the principle means of engineering control. Respirators might appear useful to reduce lead inhalation, but under the proposed OSHA regulation they could be used only before engineering controls are installed, where engineering controls are impossible (as in certain maintenance operations), where engineering controls are not sufficient to meet the standard, or in emergencies.[41] Engineering controls might properly be required because their effectiveness does not depend on hard-to-police actions by individual employees. For example, employees might refuse to wear respirators or fail to use them properly. Other alternatives, such as worker rotation to limit exposure, might be viewed as discriminatory or imposing special burdens on workers subject to rotation.[42]

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[38] Lead Industries Association, "Comments, Objections, and a Summary of Evidence by the Lead Industries Association in Response to the Proposed Standard for Exposure to Lead," Submission to Docket No. H–004, Occupational Safety and Health Administration, U.S. Department of Labor, Jan. 16, 1976, p. 9.

[39] This abstracts from questions of the appropriate level of air or blood standards.

[40] 40 F.R. 45944. Engineering controls include ventilation, machine enclosure, and machine redesign. They are contrasted with "work practice" controls, such as worker rotation, or controlling smoking or eating on the job.

[41] Ibid.

[42] What has become known as the "general duty" clause [§ 5(a)(1)] of the Occupational Safety and Health Act of 1970 [Public Law 91–596] might be taken as requiring engineering controls. That Section states ". . . Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees." It might be argued that a workplace environment which would not be safe or healthful in the absence of work practice controls violated this section. On the other hand, it could be argued that if compliance with employer-established practices alleviates the hazard, the employer has fulfilled his "general duty" under the act. The act does not establish a presumption in favor of any particular method of compliance, though section 5(a)(2) does require compliance with OSHA-established standards. These standards may mandate methods of compliance.

Moreover, engineering controls necessarily require capital investments, which could prove to be particularly burdensome to small firms. In some cases engineering controls might be much more costly than work-practice controls providing similar protection to workers. Of course, an air lead standard by itself comes close to requiring methods of compliance. This lessens employer flexibility which might, if properly monitored, allow protection at lower cost to society.

The likely costs of complying with OSHA's proposed standard appear to be substantial. An OSHA-sponsored study estimated that for the lead standard capital investments of more than $613 million would be needed every 10 years, and annual operating, monitoring, and maintenance costs would be more than $115 million.[43] The benefits from the standard may more than justify the cost. And costs may decline over time as equipment design takes into account the need for compliance. But, it is possible that a standard based on blood lead—or perhaps a combined air/blood standard—which did not effectively require compliance by means of engineering controls might yield greater protection at lower costs. We have not performed a detailed investigation of the relative merits and risks of various approaches to this problem. It is clear that careful impact evaluations and analyses would provide guidance in such complex areas. Moreover, as this example indicates, the most useful analyses will go beyond mere enumeration of benefits and costs, and evaluate the relative merits of alternative methods of control.

B. Economic Deregulation: Full and Partial

1. Broad scale economic deregulation

Full deregulation is a move to competition as it exists in the "unregulated" sectors of the economy: prices, rates of return, capacity, product quality, variety, and service levels would thus be determined in the market. Antitrust policy would play at least its traditional role. Full deregulation might be justified by efficiency and other considerations. In competitive markets, efficiency results as prices, service quantities, and qualities adjust to reflect production costs and consumer demand. Service quantities will be efficient: larger quantities would drive price below production cost; smaller quantities would leave some customers willing to pay more for additional output than it costs to produce. The unregulated market will tend to move toward the point where price just equals cost. Competitive pressures may increase efficiency and reduce costs. The economic desirability of such a move rests on expectations that the resulting market will be workably competitive, and on the absence of other conditions justifying regulation.

Each of these principles are discussed in detail in the following sections.

a. Effects of deregulation on price levels

There are two important questions on the likely price effects of deregulation. First, what is the real effect on prices of regulation?

[43] U.S. Department of Labor, Occupational Safety, and Health Administration, Technical Feasibility, Costs of Compliance, and Economic Impact Assessment of the Proposed Standards for Lead for Selected Industries, prepared by D. B. Associates, Inc., page 5–2 (undated). All costs are in mid-1977 dollars. Costs were evaluated for only four sectors (primary smelting, secondary smelting, nonindustrial storage batteries, and brass and bronze foundaries), so total costs would be higher.

Second, what degree of price competition will be likely to occur with deregulation?

Regulation fixes rates in some sectors, including truck and rail freight, natural gas, and—on the State level—local utilities. In the absence of regulation, prices above the competitive cost level could fall as firms shaded rates to capture more business, utilized excess capacity, and improve efficiency. Relaxing the entry controls supporting high prices would bring new capacity to the industry, further reducing prices. With no collusion prices would fall toward incremental production costs and output would rise. Conversely, prices fixed below the competitive level would rise, and industry capacity would expand. The extent and speed of these adjustments would depend on the ease of entry and capacity expansion; prices will not decline unless more output becomes available. Where regulation has induced excess capacity or expansion on particular routes—as in airlines and trucks—rates could adjust quite rapidly.

A study by the General Accounting Office published in 1977 [44] found that nationally, actual airline fares exceeded estimated fares that could be attained under less rigorous regulation by an annual averge of 22 to 52 percent. Under less regulation, consumers might have saved on the order of $1.4 billion to $1.8 billion annually. The study also noted that the savings could be even greater if lower fares induced greater air travel. The reforms of airline regulation instituted under the leadership of former CAB Chairman Alfred Kahn have resulted in the presence of discount fares in nearly all air-travel markets,[45] and a substantial increase in air travel despite less than fully favorable overall economic conditions. Thus, it appears that the lower fares offered to many travelers have stimulated air travel, and may ultimately result in even greater savings than those estimated by GAO.

Regulated firms may not immediately possess necessary marketing and pricing expertise and thus may be slow to pass on the possible benefits of deregulation. Regulation may have taught cooperative, rather than competitive, habits. New entrants will be particularly vital competitive forces as they are not imbued with old ways. In any event, new entry can be expected to continue until price covers cost.

However deregulation could raise prices in two situations. First, prices may be held below the competitive market levels, such as in the case of FERC natural gas and DOE oil price regulation. By removing these controls, deregulation would raise prices. All natural gas and oil users would pay higher prices. However energy resources would be produced and used more efficiently, as fuel was bid from low to high value uses.[46] Deregulation would also result in substantial windfalls to owners of gas and oil properties and producers of gas and oil. The higher returns would accrue not only to those unable to produce at lower prices, but also to producers more than willing to supply at the previous price level. The Natural Gas Policy Act of 1978 attempts to prevent such substantial windfalls by mandatory deregulation only of new natural gas.

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[44] GAO, *Lower Airline Costs Per Passenger Are Possible in the United States and Could Result in Lower Fares*, CED 77–34, pages ii–iii.

[45] Congressional Research Service, Economics Division, "Current Financial Status of the Airline Industry and the Effect of discount Fares." May 11, 1978.

[46] This is not to say that many would not pay higher prices; rather real costs would fall as resource allocation become more efficient.

So too, prices could rise if regulation had either constrained monopoly or had prevented its emergence. Prime examples of monopoly constraints are State regulation of electric utilities and FCC regulation of long distance telephone rates. Unlike oil and gas, the price increases in this area would neither encourage production nor increase general efficiency. Instead that action would provide windfall profit and decrease efficiency as consumers shifted to higher cost alternatives. and would decrease efficiency as consumers shifted to higher cost alternatives.

Similarly, prices might rise if deregulation allowed monopoly to emerge. This could occur only if the industry were a natural monopoly or oligopoly, and regulation had kept the larger firms from capturing more of the market. But even if monopoly did result, prices need not necessarily rise. Cost savings could offset the monopoly effect on prices. Also monopoly pricing is very unlikely in industries possibly subject to deregulation. Some air travel markets could be dominated by one carrier, but easy entry by carriers on other routes would bar large price increases. The scale economies in less than truckload shipping would not dictate monopoly structure or high barriers to entry. For most commodities rail rates are constrained by the cost of truck-load motor carrier service. The mainstay of this competitive service is the owner operator. There are few scale economies and entry is very easy.

Other than regulation, alternative approaches for control of natural monopoly are few. One option is antitrust dissolution of the firm, which could lead to higher costs. Franchise conditions and public ownership to be discussed below, are the other main possibilities.

b. Effects of deregulation on price structure and service variety

In competitive industries, deregulation would produce rate structures and product variety based on cost. There would be increased incentives to determine and adjust prices to the differential costs of serving various customers and producing various types of service. The prices of previously unremunerative services would rise: if at higher prices demand were not sufficient to cover costs, the products or services would disappear from the market. At the same time, prices which had been artifically raised to finance "cross-subsidies" would fall, and additional service would be made available.

Product and service variety are closely related to pricing flexibility. Since the costs of service types differ, firms would have increased incentives to offer services tailored to customer needs. In trucking, rate differentials might be based on promised delivery times, with generally higher rates for faster service. Such service is now available, but firms' freedom to devise new forms is inhibited by expensive and time consuming regulatory procedures.

A recent study performed for the Senate Committee on Commerce, Science, and Transportation found that users of trucking services desired a wider spectrum of price/service options than was presently available, and that deregulation of the industry would increase this variety in a desirable manner.[47] Freed of regulatory restrictions, firms would be able to adopt peak load pricing policies allowing smaller excess capacity during off peak periods, lower resource costs and lower average rates.

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[47] U.S. Senate, Committee on Commerce, Science, and Transportation, *The Impact on Small Communities of Motor Carriage Regulatory Revision*, (Committee Print) 95th Congress, 2d Session, pages 73–74, 127 (1978).

A primary problem with such rate differentials is that they will, perhaps inevitably, be seen as discriminatory. This will be particularly true in the case of peak load pricing, where higher charges at the peak may bear no relation to observable extra costs appearing on firms' books, but rather reflect the causal responsibility of the peak customers for the extra capacity needed for that service. If peak demand were smaller, less capacity would be needed. Since this capacity might be required only at the peak, the cost is attributable to peak period customers. Cost calculations of the kind typically made in regulatory proceedings spread capital equipment costs among many users. This may be a reason why peak load pricing has been so little-used by American utilities.[48] However, under pressure from consumer and other groups, many State utility commissions have begun moving toward peak load and other "responsive" pricing methods.

Where significant individual or collective monopoly power exists, deregulation of price could allow discrimination among customers based on willingness to pay. If barriers to entry are not high, this discrimination would be at least somewhat offset by competition. For example, in a deregulated environment, airline attempts to exact increased prices would be constrained by existing competitors and entry of new firms.

c. Effects of deregulation on technical change

Price and entry deregulation can have positive effects on the pace of technical change and the variety of products and services.

Firms with discretion to base prices on costs have greater incentive to discover and meet demand for new services. Allowing firms to reflect the costs of new technologies in rates and to engage in promotional pricing of new services would increase variety and accelerate the pace of change. For example, incremental cost rates for Big John hopper car service would have speeded its introduction. Premium prices for expedited postal service has allowed costs to be covered; this occurs now with express mail service. Allowing some pricing freedom for common carrier truckers would permit more varied service, results more in accord with customer preferences.

Such variety would also result from relaxation of entry restrictions. Firms with access to new technologies or with new product or service ideas would be more readily able to enter the market. A prime example is the enormous range of telephone answering and related equipment made available following the FCC ruling in the Carterfone matter allowing "foreign [that is, non A.T. & T.] attachments" to Bell System lines.[49] This decision held that telephone companies could not arbitrarily prevent customers from connecting their own Carterfone devices, meant for mobile service, to the telephone network. Subsequent to this decision, the FCC has extensively examined the effects of such connections.[50] An independent analysis of the available research concluded

[48] See W. G. Shepherd, "Marginal Cost Pricing in American Utilities", *Southern Economic Journal*. 33 (July, 1966), pp. 58–70.

[49] 13 FCC 2d 420, 427, (1968).

[50] For a detailed appraisal of issues see Robert F. Stone, Mark A. Schankerman, and Chester A. Fenton, Selective Competition in the Telephone Industry, T&E, Inc., Cambridge, Mass., 1976.

that connection of competitive equipment was feasible, and that competition had not significantly injured industry participants.[51] But the report also noted that equipment to be connected to the phone network should be certified to protect network functioning and that competition should be supervised to prevent predation while allowing suitably aggressive pricing by established carriers.[52] Entrants into the industry have provided a wide range of service, which in turn may have persuaded A.T. & T. to increase its own range of services.

Deregulation, and the competition that results, also helps to assure that subsequent innovations are in society's economic interest. As noted above, rate of return regulation can bias innovation to be overly capital intensive. Other biases are possible. There is evidence that, in the past, CAB regulation led airlines to introduce innovations even when the costs exceeded the benefits from a social point of view. The story of the DC–7 illustrates this point.[53] This propeller plane, introduced in the fifties, could make nonstop, coast-to-coast flights at costs somewhat above those of the alternative DC–6B, which required a refueling stop. Yet it was then known that propeller planes would soon be rendered obsolete by jets. Since, as previously discussed, CAB regulated airlines competed then on service quality rather than price, many passengers would naturally select nonstop service. Also fares were set to yield much higher profit margins on long hauls than on short hauls. Customer preference and the expected financial return made nonstop transcontinental propeller aircraft attractive to carriers. Thus, the DC–7 was developed despite its high costs and despite the certainty that it would become obsolete quickly. Research has shown that the total benefits of the DC–7 were less than its costs and, that without the high CAB transcontinental fares, it would never have been developed.[54]

Had airlines been allowed to offer lower fares on flights using the DC–6B, there would have been less competitive advantage to adopting the more expensive, soon-to-be-obsolete DC–7. Similarly, the rate of introduction of jets may have been more rapid than justified by carrier costs and real benefits to passengers. This is because carriers without jets might have suffered crippling losses, which could have been mitigated by discount fares on propeller aircraft.

The point is that in technical progress, as in pricing and investment, regulated firms will respond to the constraints of the regulatory process. In the case of airlines, excessive service often induced by regulation may have led to inefficient and overly costly innovation. Less regulation might slow at least that kind of innovation and, in so doing, improve efficiency and reduce waste.

2. The role of antitrust enforcement in deregulated markets

In most markets, private and public antitrust enforcement are the prime supplements to competition as methods for controlling monopoly, predation, and refusals to deal as well as preventing collusion and discrimination. Many regulated sectors provide services, the denial of which could inflict damages which ex post facto remedies can not easily offset or prevent. For example, sudden discontinuation of rail service

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[51] *Ibid.*, pp. 46–7.
[52] *Ibid.*
[53] Aaron J. Gellman, *The Effect of Regulation on Aircraft Choice*, (Ph.D. dissertation, Massachusetts Institute of Technology, 1968), cited in Theodore E. Keeler, op cit.
[54] Ibid.

could mean immediate injury, not subject to adequate remedy by later action. Thus, continuity and reliability of service are particularly important.

In addition, customers of regulated firms may be accustomed to using regulatory proceedings as a forum to air grievances. Full deregulation and abolition of the agency mechanism for handling complaints and grievances would appear to leave a vacuum and place a substantial burden on antitrust authorities. However, some of those problems are likely to be transitional, not enduring. For example, trucking firms accustomed to voicing complaints at ICC hearings will necessarily come to rely more heavily on direct negotiations with carriers. Firms particularly concerned with reliability or continuity of service will attempt to secure contracts guaranteeing the desired treatment.

Indeed, deregulation could lessen the need for antitrust enforcement. For example, under the Reed Bulwinkle Act, many price fixing activities of railroad and truck rate bureaus are exempted from antitrust laws. If deregulation consisted only of removing the ICC's authority to fix maximum rates, rate bureaus might attempt to exercise whatever part of their monopoly power was previously constrained by regulation. But, removal of the antitrust exemption, and hence the legalized cartel status of the bureaus, would make collusion more difficult and reduce, not increase, the real antitrust problem in trucking, where markets are unconcentrated and entry barriers small.

Proposals for increased antitrust enforcement in deregulated sectors have important merit. Whether rightly or not, the public views monopoly excesses as a major danger of movements to free market solutions. This concern, coupled with substantial uncertainty as to ultimate market structure in many freight and air transport markets, could justify devoting more antitrust resources to deregulated areas. To insure increased antitrust attention Congress could require monitoring and reporting of newly deregulated sectors by the Federal Trade Commission or the Antitrust Division. Both agencies have long experience in identifying and evaluating potentially anticompetitive situations, and neither is likely to be unduly protective of such industries.[55]

3. Partial and gradual deregulation

Most recent regulatory reform proposals are partial in scope: The agency mechanism is not abolished, and pricing and entry freedom are not complete. This was true of the initiatives to deregulate airlines and trucking as well as the recently adopted Railway Revitalization and Regulating Reform (RRRR) Act. The RRRR Act contains a vast array of financing and other provisions for aiding financially distressed lines but it also allows a measure of price flexibility. The RRRR Act allows railroads to vary prices, provided that they are above variable costs and there is no determination by the ICC that the firm has "market dominance." In other words, if the ICC determines that a railroad is dominant over a particular commodity, full rate regulation would be maintained. The statute attempts directly to answer one of the main concerns of those opposed to deregulation: The possible abuse of monopoly power. The ICC therefore assumes the role of antitrust enforcer.

[55] For discussion of the role of antitrust in deregulated markets see Commission of Law and the Economy, American Bar Association, Federal Regulation; Roads to Reform, American Bar Association, 1978, pages 57–59.

Thus, partial and gradual rather than complete and immediate deregulation appears to have been viewed as the realistic policy option in recent legislation. Why is this the case? As discussed below, most if not all regulatory changes are likely to inflict losses on some groups. Equity seemingly demands a gradual and partial change in the role of competition, even if maximum economic benefit dictates a full movement to free markets. So too, gradual deregulation may substantially reduce the value of potential benefits; at a 10 percent discount rate, a dollar benefit 2 years hence is worth only about 83 cents, and a 5-year delay reduces the benefit to 62 cents. On the other hand, to the extent that full competition would require massive and time-consuming additions to total capacity, the losses from a more cautious approach may be small. In airlines, much of the adjustment should not prove to be major, involving as it does only reallocation of existing capacity among routes and changes in seating configurations.[56] And in trucking, capacity can be expanded relatively quickly. Therefore, in those industries gradual deregulation may have substantial economic costs relative to speedier action.

The merits of gradual deregulation may go beyond matters of equity and relate directly to economic performance. In regulated sectors, both consumers and producers are naturally familiar only with business in a regulated environment. Firms' marketing, pricing, and investment strategies are keyed to existing regulations. For example, in trucking many small shippers assume the existence and availability at predictable rates of common carrier trucking.[57] In a deregulated environment, common carrier type service would be available only if enough customers were willing to pay its costs; consumers desiring stable rates and requiring assured service would contract for them in advance, perhaps on a long-term basis. The result could be common carrier type service without at the present regulatory obligations or controls. Such practices may not develop for some time, and in the interim some dislocations may occur. Gradual adjustment to the new environment would be more deliberate and less painful. Also adjustment costs would generally be less if deregulation followed a preannounced timetable. so that firms and consumers could plan their actions and reactions. Moreover, a gradual approach to deregulation allows step-by-step appraisal of impacts. However, gradual deregulation of gas could encourage producers to restrict output in anticipation of higher prices.

Although the variety of forms of partial deregulation is virtually unlimited, some key elements should be noted: relaxation of both minimum and maximum price regulations. Eased entry restrictions are discussed in relation to both pricing alternatives. It is important to note that relaxation of constraints on entry and pricing are closely related. Both monopoly pricing and predation in search of monopoly are most likely where new entry is barred.

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[56] There is some uncertainty about the overall effect of deregulation on airline capacity. Deregulation would reduce scheduling competition, thus reducing the number of flights. But decreased prices should increase demand, and pressure to cut costs may increase the number of seats offered per plane.

[57] This is not to say that current regulation is responsible for the small-shipper or small community service which now exists.

a. Relaxing minimum price constraints

Relaxing minimum price constraints could range from total deregulation to specifying "zones of reasonableness" for decreases. Many proposals include a direct-cost-of-service floor. Presumably, a major reason for retaining minimum price regulation is to prevent predatory pricing.

As discussed above, predation is generally unlikely in unregulated industries. For predation to be profitable, the predator must be able to outlast the victim or victims in a price war and thereafter be able to sufficiently raise prices to compensate for initial losses. Such increases could be accomplished only if there are high barriers to entry. With easy entry, predation generally cannot pay. In fact, documented cases of predation in unregulated markets are rare. Thus, predation would be unlikely in an unregulated airline or trucking market, because the winner of a price war on any given route would face eager entrants from other routes if prices were thereafter appreciably increased.

Predatory pricing may be more of a problem in regulated industries. Firms subject to fair-rate-of-return regulation may offer some services at below cost to increase their rate bases and justify price increases in their monopoly markets.[58] If price regulation is relaxed but entry restrictions maintained, incumbent firms face relatively little threat of entry and may find predation profitable. This suggests that minimum price constraints might best be retained unless entry restrictions are eased. With easier entry, the risk of predatory pricing is reduced.

Allowing price cuts could also discourage inefficient service competition. Without freedom to reduce rates, firms will compete by improving service quality beyond what consumers would demand if prices were set competitively to just cover costs. If several firms occupy a market and price is initially fixed above cost, firms are more willing to engage in costly nonprice competition up to the point where all potential excess profits have been competed away. Consumers clearly do place some value on the resources used in this competition. Otherwise, the expenditures would not increase sales. However, because of the inability to compete by lowering prices, the level of service or nonprice competition may be too high for efficiency.[59] In addition, those who place a higher value on lower prices rather than service are, in effect, subsidizing consumers who want greater service. Previously, the airline industry has been a prime example of this: service quality competition includes inflight movies, free meals, and most importantly, overly frequent flights and consequently low load factors and costly excess capacity. A major consequence of airline pricing flexibility would probably be an increase in load factors, allowing a reduction in the average level of fares. Recent reforms appear to have had their effect. The principal point is that, with some price flexibility, firms could adjust both rate and service quality to best conform to consumer demand.

It should be noted that minimum price regulation is often justified as being required to prevent predatory price competition. But predatory service competition is generally not observed, though it theoretically could serve similar purposes. The absence of such behavior

[58] See Harvey Averch and Leland Johnson, "The Behavior of the Firm Subject to Regulatory Restraint" *American Economic Review*. 52 (December, 1962), pp. 1053–1067.
[59] See Douglas and Miller, op. cit. and Theodore Keeler, op. cit.

may be taken as a further indication that predation is not generally seen as a useful business practice in this area.

b. Relaxing maximum price constraints

The primary policy concerns addressed by maximum price constraints are preventing the exercise of monopoly power or the collection of high returns. Maximum price deregulation has been proposed for trucking, airlines, natural gas and petroleum, and much of rail freight. The market conditions constraining undue price escalation differ among these sectors. Natural gas production and crude petroleum are generally not seen as concentrated enough to sustain monopoly pricing.[60] Without the support of the Reed-Bulwinkle Act, trucking rate bureaus would be unable to control such a fragmented industry; and most rail freight shipments are subject to trucking competition, and some face water carriers. In airlines, possible monopoly power in some less heavily traveled markets could be constrained by entry of air taxi and commuter air lines.

Relaxing maximum price constraints would be more risky if entry restrictions were not eased at the same time. Without easy entry monopoly pricing would be more likely. However, complete or sudden removal of entry restrictions may be harmful, especially if prices are for a time held well above the competitive level; the result could be excess capacity even greater than that provided by incumbent firms. It thus appears that, if partial or complete deregulation is considered desirable, price and entry controls should be relaxed simultaneously.

Partial deregulation (for example, of prices or entry, but not both) may have the unfortunate consequence of perpetuating some existing government controls. Regulatory oversight would still be required, and restrictions on entry might be used as a lever to control pricing. Yet gradual movement to full-scale deregulation softens the blow, and allows industry an adjustment period.

C. Tighter or More Complete Economic Regulation

This section examines some recent proposals for extension of present regulation to close gaps or correct observed problems.

The report has already noted the diversion of supplies of natural gas to the unregulated intrastate market and the consequent uneconomic use of a highly scarce resource and exacerbation of shortages. These effects could be reduced, if not eliminated, by extending Federal regulation to the intrastate market. This course was proposed in 1975, in the proposed "Natural Gas Production and Conservation Act" which would have required price parity for new gas in interstate and intrastate markets, with prices to be set by Federal regulators, and has been in part enacted in the recently passed Natural Gas Policy Act of 1978.

In April 1977, President Carter proposed, as part of his energy program, that new intrastate gas be regulated at the same price as new gas in the interstate market.[61] This proposal would:

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[60] The widespread existence of joint ventures and other practices may raise some questions as to this. Before 1973 crude oil prices were largely controlled by state pro-rationing authorities. At present domestic producers of crude oil appear to have little interest in restricting output, as they can sell all they wish at the OPEC determined price.

[61] Detailed Fact Sheet, "The President's Energy Program", April 20, 1977 (processed), page 16 (Section *P.E.* 3), also reported in the *New York Times*, April 21, 1977, page B10.

> . . . subject all new gas, sold anywhere in the United States to a price limitation of the Btu equivalent of the average refiner acquisition cost (before tax), of all domestic crude oil. . . . The interstate-intrastate distinction would disappear for new gas.[62]

The proposal would move the price of new gas up toward the price of oil, as well as forcing new gas price parity between the interstate and intrastate markets.[63] The result would be that as new gas is discovered it would be shared more equally between interstate as intrastate commerce. Intrastate users who had made investments on the assumption that gas supplies would continue to expand as in the past might face shortages. Shortages would thus be shared between interstate and intrastate markets, and in the long run would be less severe and damaging. If the price is held below the market clearing level, overall shortages would still exist. The Natural Gas Policy Act of 1978 (NGPA) will have these effects, to some degree.[64]

Natural gas regulation could also be strengthened by announcing a hard line on future price increases and so lessening any producer tendency to hold back in anticipation of higher prices. Such a tightening could have two dimensions: Fixing the price of old gas and constraining the price of new gas. All such regulations would presumably contain inflation escalators to maintain incentives in real terms. The Carter energy program would move in this direction by freezing the real price—to producers—of old gas, and by charting a rather definite future path of prices for new gas, and this, too is provided for by the NGPA.

Proposals have also been made to strengthen FPC—now FERC—regulation of electricity supply and pricing. For example the proposed Electric Utility Coordination Act—S. 3311, 94th Congress, 2d session—would have authorized the FPC to order, on reasonable terms and conditions, a wide range of coordination and interconnection between electric utilities. A similar proposal was advanced last year by President Carter. Importantly, this would include wheeling, whereby power could be sold by utility A to utility B through transmittal over lines owned by a third utility.[65] This could improve the competitive position of many local utilities too small economically to generate their own power, and lessen the monopoly power of some large utilities who could face competition from power wheeled in from outside their service areas. At present some utilities have been unwilling to provide such wheeling service, and the old Federal Power Commission had ruled that it lacked authority to order wheeling.[66] These problems have been remedied as, according to provisions of the National Energy Act, FERC now has the power to order both physical interconnection and wheeling between electricity transmission systems.[67]

At present States regulate retail electricity rates, and as a result pricing practices vary widely. Promotional and declining block rates, which encourage electricity and fuel consumption by allowing dis-

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[62] Ibid.
[63] Ibid.
[64] Ronald Braeutegam, *op. cit.*
[65] Detailed Fact Sheet, op. cit., page 10.
[66] U.S. Senate Committee on Commerce, Report on S. 3311, Electric Utility Coordination Act, 1976, pp. 1, 7.
[67] DOE, Office of Public Information, The National Energy Act, November 1978.

counts, are common. Peak-load pricing, which could substantially lower needed capital investments and was little used until recently. Today many utilities use peak-load pricing for industrial and large commercial customers.[68]

President Carter's energy proposals program would have alleviated these problems by requiring the institution of peak-load pricing, and phasing out and elimination of promotional and other rates not reflecting costs.[69] The utility provision of the National Energy Act as adopted, require state utility commissions to consider a variety of standards for rate design, including peak-load and time-of-day pricing, cost-base rates, and other procedures designed to conserve energy. States are not required to institute any of these reforms.

Rate of return regulation of monopolies can cause excessive use of capital. At the Federal level, the prime candidates are telephone long lines and fuel pipelines. In theory it would be possible for regulators to oversee technological and capital investment decisions to offset these tendencies. But to do so, regulators would have to second-guess highly technical decisions of company management. This, says former CAB chairman and public utility expert Alfred Kahn, "Commissioners could do only if they were prepared completely to duplicate the role of management itself, and it is difficult to see how any company could function under two separate but unequal managements." [70] Kahn's point is well taken, though perhaps a bit exaggerated. Review of major investment decisions could, in some cases, perform a useful constraining function. Several examples from telecommunications indicate that such an extension of regulation might occasionally be desirable.[71]

In the early 1960's, a choice was made between two methods of satellite communication. The Bell System, after conducting considerable research and development, had with others advocated the capital-intensive random orbital system. This system would have required investment in about 50 satellites. The synchronous-orbit method involving fewer satellites and simple ground stations, was much less capital intensive. Developed by Hughes Aircraft, this method rapidly prevailed after 1962.[72] Possibly, the Bell System preference for the more capital-intensive method was prompted in part by regulation-created incentives to expand its rate base.[73] An alternative explanation is that Hughes Aircraft may have developed the synchronous-orbit system more rapidly than had been expected.[74]

The Bell System has also resisted proposals that leased satellite circuits be used for international communications, and has instead urge new transatlantic cables as an alternative to satellites.[75] These Bell policies increased the rate base and potential profits. Again, there are alternative interpretations of such episodes: as several observers

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[68] Ibid., p. 3.
[69] Detailed Fact Sheet, op cit., p. 10.
[70] Alfred E. Kahn, "The Economics of Regulation: Principles and Institution," Vol. 1, (New York: Wiley, 1970), p. 30.
[71] These examples are taken from William G. Shepherd, "The Competitive Margin in Telecommunications," in William M. Capron, ed., Technological Change in Regulated Industries. (Washington, D.C.: The Brookings Institution, 1971). As noted below participants in the Brookings conference at which the Shepherd paper was discussed offered alternative explanations. And Shepherd himself qualified his interpretations.
[72] Ibid., p. 107.
[73] Ibid.
[74] William M. Capron and Roger A. Noll, "Summary and Conclusions," in William M. Capron, ed., Technological Change in Regulated Industries, op. cit., p. 209.
[75] Shepherd, op. cit., p. 107.

have questioned, "Can A.T. & T. be faulted if the Defense Department, the State Department, and the FCC all pushed for another expensive transatlantic cable because they believe the cable and the preservation of the cable-producing industry to be required for national defense and foreign policy purposes? And considering comparative risks and costs of failure, are cables really more expensive?" [76] It would be most difficult to determine whether such incidents represent regulation induced bias.

D. Competitive Bidding for Franchises

Conceptually, regulation may be viewed as a contract imposed on firms, with resulting effects on the customers, competitors, and employees of that firm. Such contractual obligations could be imposed as conditions for granting a monopoly or other franchise, such as to an electric utility, to a petroleum pipeline, or to a cable television system. If detailed and continuous monitoring of contract compliance were not required, the franchise terms might substitute for some aspects of regulation. Yet, absent regulation, how are franchise awards to be determined?

One possible solution is competitive bidding. However, realistically the monitoring required to insure "contract" or franchise compliance would require structures very similar to that of present regulation. Thus, contrary to the arguments of its original proponents, competitive bidding for franchises may be a relatively unattractive means to control natural monopolies.[77] That need not be true in all areas. In some cases, such as the distribution of subsidies to local service airlines, franchise bidding may be a viable alternative. Two principal cases are here examined: (1) franchise bidding as a means for control of monopoly, and (2) bidding as a means for helping to provide subsidized service. One limitation should be noted at the outset. If the franchise imposes costly conditions, the franchised firm must be protected from competition from firms not so encumbered.

As discussed previously, regulatory concerns in natural monopoly situations include elevated prices and unduly discriminatory policies. In the United States, rate of return or other price-oriented regulation has been the standard policy treatment. The logic is that under free competition one firm would dominate the market, with monopoly pricing the inevitable outcome. Without competition, the dominant firm would of course charge a monopoly price and would, if profitable, discriminate.

However, lack of competition in supplying a market does not imply lack of potential competition for the right to supply. The Government might put franchises out at competitive auction. Franchise terms could specify service quality and obligations as well as price. Within those terms, the franchise would be granted to the firm making the most attractive—that is, lowest—price offer. Absent collusion, any potential bidder has an incentive to lower his offered price toward his average cost of production—that is, potential suppliers will find it profitable to offer lower bids until their expected revenues just cover total costs, including the necessary return on investment.

[76] Capron and Noll, op. cit., p. 209.
[77] The original argument is presented in Harold Demsetz, "Why Regulate Utilities?" *Journal of Law and Economics*, 11 (April, 1968), pp. 55–66.

1. Limitations of competitive bidding and "Regulation" by franchise terms

Can franchise bidding achieve the goals of regulation with greater flexibility and lower administrative costs? Perhaps, but not obviously. First, in the natural monopoly situation in which franchise bidding appears most appropriate, the regulatory problem has several main dimensions: first, to prevent the exaction of excess profits—i.e., to reduce prices to the level of average cost. Second, to induce output expansion toward the efficient rate—i.e., where price to the incremental customer equals the incremental cost of production. Third, regulation must prevent undue discrimination. Finally, regulators must provide incentives and maintain the efficiency of the regulated firm.

Franchise bidding can moderate, if not completely alleviate the excess profit problem. For success, there must be enough efficient potential suppliers to make collusion difficult. With very few potential suppliers, bidding might not be competitive, and thus monopoly power would not be effectively constrained. It is equally important that there be a substantial number of *efficient* potential suppliers. If one potential supplier is significantly more efficient than the other he would, of course, be able to make the best offer and would get the franchise. If bidders have reasonably good estimates of competitors' costs, the efficient bidder could peg its offer at just below the costs of the next most efficient supplier. Excess profits and inefficiency would remain, so there would be a continuing role for some regulation to counter these problems.

Bidding processes and franchise terms can be structured to encourage efficiency. At the outset, firms facing competition have an obvious incentive to keep costs down so as to offer low bids. If the franchise fixes prices for a period of time, cost decreases can accrue to the firm as increased profits, and the reverse is also true. If the franchise is subject to periodic renewal, an incumbent must maintain efficiency to insure a continued hold on the market. The main problem here is that an incumbent will tend to have a number of advantages, such as the knowledge of how to adjust efficiently to the peculiarities of market conditions. The franchise-holder will also have experience in dealing with regulatory authorities and, if performance has been satisfactory, an advantage over other potential competitors.

The precise duration of the franchise term is of critical importance. The award must be long enough to allow planning and to provide sufficient incentive to invest. If the award is for an indefinite period, or if the renewal process does not or cannot truly open the market to competitors, pressures for efficiency are reduced. Long franchise periods mean that the contract must specify adjustments to contingencies such as cost increases, shifts in demand patterns, and technical change. Contracts cannot usually take all such contingencies into account.

At minimum, the franchise award must specify means for determining the adequacy of performance and resolving disputes—for verifying cost changes, the reasonableness of charges, and so on. That necessarily creates the need for regulatory bodies; thus in the real world

of uncertainty and economic change, competitive bidding for franchises cannot be a full substitute for administrative regulation. Instead the actual monitoring of franchise performance would evolve toward some form of regulation.[78] This is particularly true in fields subject to rapid technological and economic change, and with long-lived, immobile capital. Using the bidding method to choose providers of subsidized air or truck service appears more promising than for choice of a local electric utility. In the former case, the capital involved is less durable and more mobile and the incumbent's advantages substantially less.

In natural monopoly situations, specifying a single price cannot lead to full efficiency; since incremental cost will be below average cost, no single price can both cover total costs and induce an efficient rate of production. Therefore, for efficiency the bidding process must produce a price structure which allows the firm to collect adequate revenues while still sufficiently expending production. It is not clear how a franchise authority should choose among alternative price structures, although a basis of lowest total revenue for delineated levels of service is one possibility. Even so, rate differentials could result in the same sort of disputes over discrimination and price-cost relations as occur under the present system.

Since the incumbent will enjoy substantial advantages in franchise renewal, other firms will have an incentive to bid low so as to gain a foothold, perhaps incurring initial losses in exchange for future advantages. For example, in bidding for a CATV franchise for Oakland, Calif., the low and winning bid—by an inexperienced firm—was less than one-third of the bid submitted by TelePrompter, a large and experienced cable operator.[79] Subsequent problems in meeting franchise terms indicate some validity to this "foot-in-the door" theory. This suggests that the awarding authority must have the power to appraise the credibility of bids as well as to monitor subsequent performance—all of which further suggests the need for regulatory structures similar to those existing today.

These considerations demonstrate that franchise bidding is neither a panacea nor a realistic substitute for the full range of regulatory authority. That approach, however, does have advantages. In a natural monopoly situation, periodic bidding for franchise rights places an incumbent under increased competitive pressure to perform well and keep down costs. Due to the complexity of products and technology in many regulated sectors such as telephones, the bidding process should generally not be a simple auction with price the sole criterion. Yet soliciting and comparing the offers of alternative suppliers can provide regulators with yardsticks for appraising incumbents. Of course, a viable bidding process assumes that franchises must, on occasion and for due cause, be awarded to challengers.

2. Areas where franchise bidding might be useful

One possible area for the use of franchise bidding is in broadcasting. Broadcast frequencies open to competitive bidding would go to the

[78] See Oliver E. Williamson, "Franchise Bidding for Natural Monopolies—in General and with Respect to CATV", *Bell Journal of Economics and Management Science*, Spring, 1976 vol. No. 1, pp. 73–104.

[79] Ibid., p. 94.

highest bidder, whose bid would be affected by consideration of what programming would obtain the largest audience and hence the greatest advertising revenues. In consequence spectrum space would be allocated more in accordance with majority consumer preference. The franchise could be issued subject to certain conditions, such as the fairness doctrine, the prohibition of pornography, and so forth.

Franchise bidding is most promising where rate structures are simple, and investment is small and short term. Subsidized local airline and other nonremunerative services are possible areas for competitive bidding. Bids could be invited for the franchise, with the firm requiring the lowest subsidy receiving the franchise. That scheme may be an effective way to minimize the total cost of such service. Preventing collusion in bidding is, of course, most important and would presumably be a joint responsibility of certain regulatory agencies and the Justice Department. As with all movements toward free market solutions, increased antitrust vigilance would be desirable.

Franchise bidding is less promising in the areas of electric power and telephone service. In those sectors, rate structures are so complex that it would be difficult to establish a process by which franchises were awarded. Further, franchise terms would have to be very long, because capital is long lived; yet cost and demand prospects could not be predicted for 20 to 30 years. Thus those areas are unlikely prospects. On the more positive side, as electricity rate structures are simplified, control via franchise terms may become more feasible.

E. Nationalization and Public Ownership

Federally owned and operated public enterprises are relatively unimportant in the U.S. economy. In many Western nations, most of energy (gas and electric), transportation (especially rail and air), and communications (broadcasting and telephone), are under central government ownership and operation. In the United States these activities are, for the most part, privately owned and publicly regulated. One authority estimates that in 1974 about six percent of the national income in finance, manufacturing, utilities, transport, trade, mining, construction, and agriculture came from public enterprises.[80] Other governmental activities—such as schools and defense—accounted for about 16 percent of national income. In 1970, excluding public administration and defense, approximately 12 percent of employment was in facilities owned 50 percent or more by a Government agency.[81] This employment is concentrated in utilities and services—health and others—where State and local public enterprise is common.[82] Table 4–1 contains data on the importance of public enterprise in the United States compared with that of several other countries, based on percent of the labor force.

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[80] Clair Wilcox and William A. Shepherd, "Public Policies Toward Business," 5th ed., R. O. Irwin: Homewood, Ill., 1975, p. 12.
[81] Frederic L. Pryor, "Public Ownership: Some Quantitative Dimensions," in W. G. Shepherd, ed., "Public Enterprise," Lexington, Mass.: D.C. Heath and Co., 1976), p. 21.
[82] Ibid.

TABLE 4-1. PUBLIC OWNERSHIP SHARES IN MAJOR SECTORS BY PERCENT OF LABOR FORCE, UNLESS OTHERWISE NOTED

[In percent]

	Total	Total, material sectors [1]	Utilities [2]	Transportation and communication
United States, 1960	15	5	28	18
Japan, 1960	10	5	20	42
Sweden, 1960	20	6	71	53
United Kingdom, 1962	25	17	[3] 70	[3] 70
Austria, 1966 [4]	31	27	100	78

[1] Includes utilities; transportation and communication; construction; manufacturing and mining; and agriculture forestry, and fishing.
[2] Gas, electricity, water, and sanitation.
[3] Data for transportation and communication and utilities are combined.
[4] Based on GNP data.

Source: Frederic Pryor, op. cit., p. 11.

International comparisons are fraught with difficulties. Table 4–1 indicates that, while public enterprise has a substantial role in the United States, it is relatively unimportant in transportation, communications and utilities. (Japan, however, had an even lower overall public enterprise share, and was lower in utilities.) All the same, public enterprises are not uncommon in this country, and are operated at all levels of government. Many local governments own transit lines, water and sewage systems, electricity generation and/or distribution, ports, and airline terminals. A number of States operate such enterprises as ports, liquor stores, and electrical facilities. Major Federal enterprises include the electrical and other activities of the Army Corps of Engineers, Bureau of Reclamation, and Tennessee Valley Authority; the Postal Service; the St. Lawrence Seaway and Panama Canal; and DOE nuclear enrichment plants.

1. Reasons for public ownership

This widely divergent pattern of public enterprise throughout the world is subject to no simple or unified explanation. The justifications reflect political, cultural and ideological differences, patterns of economic development, and historical accident. W. G. Shepherd, a leading authority, notes the following potential gains from public enterprise:

1. Improved efficiency, and ability to innovate and take major risks.
2. Softening of the social impacts of enterprise decisions, and improvement in regional and urban balance.
3. Improved social relations within the enterprise.
4. Improvements in equity, by reducing prices for needy citizens.[83]

It is not clear to what extent public enterprise has achieved these objectives. Another authority, Frederic Pryor, noted the following principle influences which might lead to public enterprise:[84]

[83] William G. Shepherd, ed. Public Enterprise, op. cit., p. xii.
[84] Frederic Pryor, op. cit., p. 9.

1. Economies of scale leading to "natural monopoly."
2. Externalities, either positive (for example, multipurpose river projects), or negative (for example, nuclear enrichment).
3. Public purchases where the government is a major or sole buyer.
4. Large "unearned" income—for example, mineral deposits.
5. Power and sovereignty, for example, weapons and in smaller export dependent countries mineral production.

Comparing the observed shares of public enterprise in various sectors across countries, Pryor found some consistency with these explanations: For example, in most countries, utilities which may be natural monopolies, have a high share of public ownership. Similarly, mining—with its potentially high share of "unearned" income—shows a substantial degree of nationalization in many countries.[85] But considerable unexplained variation exists, indicating that the rationales for public enterprise are more complex and mixed than the above taxonomies indicate.

Federal ownership could be an alternative to regulation in a number of areas. These could include oil and natural gas pipelines, electricity generation and transmission, airlines, railroads, and broadcasting and telecommunications. Such areas are Government owned in most Western countries. Certainly there is foreign precedent for public ownership of at least some capacity in mining (often subject to Federal leasing and land-use regulation, and posing substantial enviromental problems) and in many other areas. Public ownership is without doubt an alternative to present regulation in transportation, telecommunications, and energy. But what are the possible merits and demerits of adopting that method of public control?

2. The performance of public enterprises: Principles and examples

Public enterprise might be justified by benefits, costs, or consequences external to private profit and loss calculations. These externalities may be economic, social, or political, and of course can include monopoly pricing. Economic performance will depend on the operating rules as well as public enterprise behavior pursuant to that framework. Rules must encompass pricing, investment, service quantity and quality, treatment of workers, and other matters. Particularly important are the strictures governing access to public funds, such as rules on subsidies, investments, and the bearing of risk.

The advantages of public ownership are viewed as twofold: First, such enterprises might give less weight in their decisions to ordinary commercial considerations of profit and loss; it is thus hoped that desired social ends can more readily be achieved. A second related advantage is that public enterprises may have readier access to public funds if subsidies are deemed desirable. However, an adverse side effect of these advantages may be inefficient performance.

Economists have often made equivocal judgments on the likely performance of public enterprises. In his fundamental treatise on welfare economics, A. C. Pigou advanced the following contentions: (a) the efficiency of private and public corporations will be similar because they face similar demand and cost situations; (b) Government

[85] Ibid., pp. 9–19.

enterprises will be inefficient because of preferential access to public subsidies and legal restrictions on competition; and (c) public enterprise will encourage efficiency because the Government, through the use of eminent domain, can better forecast land use.[86]

Plausible arguments can be made in favor of all these contentions. The picture of public enterprise is in fact highly varied. Just as public enterprises play less of a role in the United States than in many other industrialized countries, so have they been less studied. It is therefore difficult to present a balanced or complete picture of the achievements and problems of public enterprise in this country. Many of the examples come from other nations where public enterprise is not only more common but more widely studied.

Recent students of public enterprise have focused on the difference which public ownership is likely to make for behavior. A major difference results from the fact that, to a much greater extent than private enterprise, public enterprise operates in political as well as economic markets.[87] That is, the corporate vitality of public enterprizes in large part depends, not only on the consuming public, but also on the legislative or other authorities which oversee the firm's performance and budget. The importance of maintaining good relations with the oversight authorities may cause deviation from the course that would best serve the consumers or, indeed, taxpayers who eventually bear the costs of inefficiency. Such behavioral differences are important in evaluating the performance of public enterprises, as illustrated by Federal operation of Veterans' Administration hospitals.

a. The performance of Veterans' Administration hospitals

As of fiscal 1972, the Veterans' Administration operated over 160 general hospitals, and a wide range of facilities to serve veterans not requiring hospitalization.[88] Costs are paid by the Federal Government. It is often argued that, lacking market discipline, and having access to subsidy, public enterprises will be inefficient and very costly. A comparison of Veterans' Administration hospitals with proprietary hospitals disclosed, however, that the costs of the VA hospitals were substantially less; that is, in 1973 the per diem costs in VA hospitals were estimated as $49.09, while costs in proprietary hospitals were $82.87.[89]

Does this indicate greater efficiency of the VA hospitals? Possibly, for they are staffed by salaried physicians who may have little or no incentive to over-utilize expensive facilities and procedures. But other explanations are also consistent with the observed lower costs.[90] Many patients who may go to VA hospitals have little incentive to seek other other facilities, because the VA hospital is free. Thus there is little

[86] A. C. Pigou, The Economics of Welfare, 1920, pp. 343–356; cited in and paraphrased from Sam Peltzman, "Pricing in Public and Private Enterprises: Electric Utilities in the United States; *"Journal of Law and Economics,"* XIV (April 1971), p. 109.

[87] See Sam Peltzman, Ibid. Also see Cotton M. Lindsay, Veterans Administration Hospitals: "An Economic Analysis of Government Enterprise," Washington, American Enterprise Institute, 1975, and "A Theory of Government Enterprise," Journal of Political Economy, Vol. 84, (October 1976, pp. 1061–1078). Basic underlying sources on political economics include Anthony Downs, "An Economic Theory of Democracy," New York: Harper and Row, 1957, and Mancur Olson, "The Logic of Collective Action," Cambridge: Harvard University Press, 1965.

[88] This discussion draws on Cotton M. Lindsay, Veterans Administration Hospitals op. cit., and Cotton M. Lindsay, "A Theory of Government Enterprise," op. cit.

[89] Ibid., p. 1070.

[90] Ibid., pp. 1069–1071.

demand pressure to keep up quality.[91] While it is very difficult for Congress to monitor the quality of VA patient care, it is relatively easy to monitor overall costs and staffing levels. According to Lindsay, managers of VA hospitals are able to provide care at lower cost, because neither patients nor Congress can easily monitor subtle aspects of health care such as crowding, and other amenities. The difficulty of monitoring such dimensions of quality mean that management may underproduce them relative to what consumers would be willing to support. Also, beyond assuring a threshold level of adequate care, Congress might not choose to appropriate funds for additional staff, and other matters, knowing that managers have little direct incentive to use these resources to improve patient care. Some of the data are consistent with these theories. Staff/patient ratios are typically much lower in VA than in proprietary hospitals, and the proportion of VA physicians who are foreign trained and arguably less desired by patients, is much higher than average.[92]

Further, for given procedures the typical length of stay in a VA hospital greatly exceeds that in voluntary—nonproprietary—hospitals. One explanation may be that if patient days are an attribute of output which Congress can readily monitor, VA managers may have incentives to increase output by keeping on those patients requiring little actual care. One such class of patients are those simply awaiting release or nearly recovered.[93] All of these considerations indicate that incentives in government enterprises may differ from those in private enterprises. In the VA hospital this difference may have led to lower apparent cost, while the true cost, considering quality, may be either lower or higher.

b. The relative performance of private and public airlines in Australia

It is difficult to make valid comparisons between public and private enterprises.[94] The two types typically operate in different circumstances. International comparisons also lose meaning because of different technologies and varied institutional constraints. However, interstate airlines in Australia allow a particularly apt comparison.[95]

Two airlines provide service among Australian states. These are Trans Australian Airlines (TAA), a government firm, and Ansett Australian Airlines (AAA), a private company.[96] Because both carriers are subject to the same controls by a single regulatory agency,[97] the firms are consequently similar in most important respects. To assure parity between the airlines the government has:

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[91] As discussed below these incentives generally may be weak in the hospital market.
[92] Ibid.
[93] This is not to say that lower "quality" of hospital care is necessarily always bad. As discussed below, there is considerable evidence indicating that the rapid pace of hospital cost inflation may be due to hospitals competing by escalating the "quality" of care in an environment where most costs are covered by insurance.
[94] In principle, statistical studies could be designed so as to correct for, or "hold constant" other factors, and to estimate the differences attributable to the form of ownership. It is generally difficult to obtain needed data, e.g., information on input costs; private firms performing functions similar to public firms are often regulated, and it may be difficult to separate the effects of regulation from those of ownership.
[95] This discussion is based on David G. Davies, "The Efficiency of Public Versus Private Firms, the Case of Australia's Two Airlines," Journal of Law and Economics, vol. XIV, No. 1, April 1971, pp. 149–165.
[96] The Davies study (ibid.) based on data through 1969. These two lines still provide virtually all interstate service, Communication with the Embassy of Australia.
[97] Ibid., p. 155.

1. Set practically the same routes for the two carriers;
2. Allocated equal plane and fleet capacity for both passengers and freight on the interstate routes;
3. Required the two firms to acquire the same type of aircraft, and to introduce aircraft into service at the same time;
4. Prohibited a third party competitor from entering the industry so that the two firms together will not lose traffic, and, therefore, neither would lose more traffic than the other;
5. Created rules to help assure that each firm can enjoy comparable cost structures;
6. Controlled time schedules, specific ports of call and frequencies of visits to the various stopping places; and
7. Created equal prices to be paid each firm for passenger service as well as equal rates for freight services.[98]

These conditions insure essentially identical demands and technologies for both carriers. Policies also equalize dividend and insurance payments,[99] and employees of the two firms are paid virtually the same wages.[1] The two firms therefore appear to have the same potential efficiency. Yet the data indicates that this potential is not realized. Over the period 1958–69 the private firm—AAA—averaged 10.73 tons of freight and mail per employee compared with the public firm's—TAA—4.86.[2] Passengers per employee averaged more than 20 percent higher for the private firm, and were higher in each year studied. Finally, revenue per employee averaged 13 percent higher in the private firm. These results indicate that the private firm is substantially more productive than the Government firm.

That outcome may be due to details of product quality or service which made the private firm more attractive to customers. Or the private firm may have been more efficiently organized. Whatever the explanation, it appears that even in this restricted environment the efficiency pressures from private ownership were effective and that public ownership was not conducive to the best use of resources.[3] It is important to note that this example does not clarify the merits of competition between public and private enterprises, for neither firm is free to compete in any meaningful sense. Consistent with the discussion of V.A. hospitals above, it may be that the private firm is superior in passenger service or other attributes of output not visible to the monitors of Government firms. Clearly, the managers of the Government firm have no direct incentive either to increase passengers or reduce costs.

3. Public enterprise in natural monopoly sectors

Unregulated private monopoly may restrict output, exact excess profits, and charge discriminatory prices. Shielded from competitive pressures, monopolists may also become inefficient. In true natural monopoly situations, complex rate structures may be needed to insure that total costs are covered and that all those willing to pay incremental costs obtain service.

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[98] Ibid. p. 161.
[99] Ibid., p. 159.
[1] Ibid., p. 165.
[2] Ibid., p. 164.
[3] It is a fact that the Australian airline industry has been a political issue for over 25 years, and the system partially appeases strong politically active minorities of the left and right, desirous of public and private enterprise, respectively. Ibid., p. 165.

Regulation can, as we have seen, induce rate base expansion and prevent efficient pricing. In principle publicly owned enterprises can operate under rules requiring efficient pricing, and be free from incentives to expand the rate base. It is perhaps noteworthy that the publicly owned French electrical system with its "Tariff Vert" was the leader in the adoption of peak-load pricing. American investor-owned electric utilities, operating under regulation basing rates on average production costs, have been slow to adopt such pricing strategies. The result may have been excessive generating capacity and higher rates.

The problem is to devise appropriate rules and insure that the managers and employees of the public enterprise follow them. As noted above, this may be difficult. The success and survival of the firm is not governed by market forces, and managers lack clear incentives to be efficient. The incentive to be responsive to consumer demand is not so sharp as with private enterprise. On the other hand, public enterprises may be more responsive to larger or noneconomic public concerns. The question is whether there are situations where public enterprise is a better policy alternative than other available instruments including subsidies, taxation, and other incentives and inducements applied to private enterprise.

It is true that public enterprise has no direct economic incentive to expand capital inefficiently, as may be the case for regulated private firms. On the other hand, the cost of capital to the enterprise is likely to be set at low Government rates, with an implicit subsidy in the form of Federal loan guarantees which encourages the overuse of capital. Low rates will then be feasible, and the enterprise may expand further than would be justified by social efficiency. And granting of an exclusive monopoly franchise to a nationalized firm removes competitive pressures and could increase costs. Incentives could be partially restored by mixed private-public enterprises in which some capital must be raised by resort to the market. A requirement that the enterprise return at least some rate of return to the treasury could also provide incentives for efficiency. It is not clear, however, how that requirement would be enforced.

Movements toward efficiency may conflict with some of the social goals of public enterprise. For example, a major objective of the TVA was to promote regional development; one of the declared goals of the Postal Service is to provide unified, widely available national communications as well as to promote—via cross-subsidization if necessary—the development of media such as magazines and newspapers. Yet greater efficiency might require pricing at incremental cost for all service, perhaps without regard to these declared social objectives.

It will be difficult to assure efficient operation of all public enterprises. Costs are raised by bureaucratic incentives to increase staff size and enterprise scale. Civil-service-type restraints on salaries, promotions, and firing can adversely impact the quality of personnel performance. To some extent, those factors will be drawbacks to efficiency. But the relevant question is how well these enterprises perform relative to regulated private firms in similar circumstances. The field is so varied that generalizations are perhaps dangerous. One authority has concluded that in utility sectors profit and rate structures of public firms resemble those of private firms.[4] Shepherd also con-

[4] Clair Wilcox and William G. Shepherd, Public Policies Toward Business, 5th ed. (Homewood, Illinois: Richard D. Irwin, Inc. 1975), p. 552.

cluded that there may be some benefits of public enterprise, relative to private firms, in terms of better employee relations and improved service quality. But Shepherd also noted that these gains often come at substantial cost in terms of subsidy and effort of policy-level Government officials.[5]

a. Public enterprise in electric power

At the Federal level, there are a number of publicly owned electricity systems including the TVA and Columbia Basin System. Overall, publicly owned systems at all governmental levels account for about 21 percent of *total* electricity supply.[6]

Since much of the Federal portion is based on hydroelectric power, the supply of which is relatively fixed, the share may decline over time. How has public enterprise performed in the electric utility sector in the United States? The record is not complete, and comparisons are complicated, among other things, by tax advantages and differing regulatory treatments. The TVA provides an interesting case study.[7]

TVA costs of operation are met from its own revenues, though the Office of Management and Budget approves administrative expenses and construction plans, the Treasury Department approves borrowing terms and GAO audits the Authority's books. Yet the TVA is regulated by neither State nor Federal commissioners. Established as a multipurpose agency with basic responsibilities for flood control and maintaining water flows needed to maintain navigation, the TVA's enabling legislation required its power activities to be self-supporting. Within this framework, the Authority has historically followed a policy of low rates to promote the use of electricity. Overall, present-day subsidies appear small; the Authority pays a share of revenue to local authorities in lieu of taxes. But it is exempt from Federal income taxes, which confers a substantial advantage. The Authority pays low Government rates on capital borrowed from the Treasury and its bonds are federally guaranteed. Massive direct subsidies have not been required, and since 1953 Congress has appropriated no new funds to finance power facilities. TVA obtains substantial capital in the private market, and thus is subject to more stringent discipline than if all its capital came from public funds. With its relatively low rates, it appears to be clear that TVA is not substantially inefficient relative to private firms in similar position. The system is widely known to be a technological leader.[8] But the issue is somewhat clouded by the problem of the cost allocation of dams, administration, and other facilities and activities (such as power, flood control, and navigation) to which they contribute. It is conceivable that too small of a share of these costs is charged to the self-supporting power activities and, hence, too much to the taxpayer. Wilcox and Shepherd conclude that these effects are either minor or nonexistent,[9] and that TVA "* * * is now much like any other large power system."[10] Most of its power comes from steam-electric plants which are largely independent of its flood control activities.

[5] Ibid., pp. 551–552.
[6] Ibid., p. 552.
[7] This discussion is based on Wilcox and Shepherd, op. cit., pp. 556–561.
[8] Ibid.
[9] Ibid, p. 560.
[10] Ibid, p. 561.

Studies of public electric power systems in Britain and France generally indicate relatively efficient and frequently innovative performance, especially in peak load and other forms of marginal cost pricing.[11] Central management and system planning, may have encouraged flexibility, or Government support may have freed management to take risks which private firms would have avoided. In addition, highly competent and innovative economists were influential in both the British and French electrical systems. Finally, proposals for planning and pricing in both systems could be developed and pursued centrally, without having to conform to the requirements of State regulatory authorities. On the other hand, such centralization might well have resulted in rigidity and stagnation, though it has not in France.

Some evidence on the behavior of local publicly owned electric utilities in the United States is contrary to the general picture of efficiency and responsiveness of the French and British systems.[12]

Public enterprises depend on political support to a greater degree than do private enterprises in similar situations, with consequent impact of the firm's behavior. Since all consumers have one vote, it might be expected that public enterprises would not want to risk alienating a particular group, even one which had become relatively expensive to serve. Therefore, rates charged by public enterprises might be expected to be more uniform and less fully reflect cost differences than those of private enterprises. In a comparison of private and public utilties, Peltzman found evidence consistent with this theory: public firm rates were more uniform than private,[13] and the public enterprise tended to give less weight in pricing to the identifiable costs of serving particular groups.[14] The rate schedules of the private utilities studied also tended to contain more classes than those of public firms.[15] Of course, this lesser price variance is also consistent with "competitive" reflection of costs in prices and with monopolistic price discrimination by private firms. However, in a natural monopoly situation, price discrimination may induce firms to expand output toward competitive levels. If publicly owned utilities engage (or are allowed to engage) in less discrimination than is permitted regulated private utilities, output by the public firms may be lower. Peltzman found some evidence consistent with this view.[16] This does not mean that the performance of publicly owned natural monopolies will be worse than that of regulated private firms. Rather, the effects can be mixed, with private firms sometimes being more efficient, public firms sometimes taking more initiative, and perhaps appearing less "discriminatory" in their actions.

b. Public enterprise in rail transportation

Railroads provide another example of public enterprise to deal with natural monopoly problems. It is noteworthy that railroads may have come under public control, not only because of their once substantial market power, but because of their importance for national development. The British, French, and German railways are fully na-

[11] Ibid. pp. 563–564.
[12] This discussion is based on Peltzman, op. cit.
[13] Ibid., pp. 128–129.
[14] Ibid., p. 133.
[15] Ibid., p. 136.
[16] Ibid., p. 138.

tionalized. In Canada the Canadian National Railroad competes with private Canadian Pacific. Most railroads, whether public or private, have been pressed hard by increasing competition from other transport modes. Most railroad systems abroad run deficits.[17] Many of the foreign systems have been relatively innovative, and have quickly introduced new equipment. Generalizing from a range of studies, Wilcox and Shepherd note that:

> If anything, there has been a fixation on new traction, containerization, and similar engineering improvements (which some U.S. railroads, under regulation, have tended to slight).[18]

This innovativeness may have been due to the security of guaranteed backing from the national government. Such achievements can be costly and it is not obvious that even the best foreign public railroads are efficient. The French railroads (SNCF) carry substantial passenger traffic on fast, modern trains.[19] Freight service is generally fast with tariffs designed to stimulate traffic. But government subsidies have been substantial—in the late 1960's, over a billion dollars per year. This degree of subsidy does not necessarily indicate inefficiency but, rather may reflect some of the imposed burdens of providing uneconomic services.

c. The continuing need for regulatory intervention in public enterprise decisions

Ultimately any public enterprise is overseen by some Government authority. The enterprise may be given considerable autonomy, as is the TVA; or it may be directly regulated by a specially established commission, as is the Postal Service. Unless the public is willing to trust those operating the enterprise, and rely on residual competitive pressures, public ownership is likely to involve the same types of issues and problems encountered in more conventional regulation: Should service be extended to this or that locality? If so, at what price? Are rate structures unduly discriminatory? It then appears that nationalization or public enterprise does not necessarily remove all need for regulation. As noted throughout this report, regulation is very often more concerned with aspects of politically defined equity and fairness than with efficiency. Public enterprises, which are concerned with political and governmental supports, may heed the political and social "market" without much direct regulatory urging.[20] In fact, public ownership may add a dimension to regulatory supervision. Since the Treasury supports the firm and the public bears the risk of mistakes, careful monitoring of major investment decisions is clearly required.

4. Competition by publicly owned enterprises

More than 80 years ago in 1874, the Windom Committee of the Senate—which was considering alternative means of dealing with railroad monopoly and discrimination—proposed entry of Govern-

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[17] Wilcox and Shepherd, op. cit., p. 564.
[18] Ibid.., p. 565.
[19] This discussion draws on James R. Nelson, "Public Enterprise: Pricing and Investment Criteria," in William G. Shepherd, ed. "Public Enterprise," (Lexington, Mass.; D.C. Heath and Company, 1976), p. 73.
[20] The work of Peltzman, cited above, levels support to this view.

ment-operated firms.[21] The notion was that such firms would restrain private monopoly. Today, public enterprises, such as TVA, can provide a "yardstick" against which the performance of regulated investor-owned companies may be judged. In electricity distribution, customer relations and other practices of co-ops and municipals can provide standards for evaluating investor owned firms. Such yardsticks are particularly important in regulated natural monopolies where competitive pressures are weak. But overall cost comparisons are difficult to make. Government enterprises do not pay corporate income taxes. Capital is sometimes provided at very low interest rates. Taxpayers bear all of the risk and firms need not resort to equity markets.

Government enterprise could provide competition in monopolized sectors, or further other social goals. Yet there are possible drawbacks. Because public enterprises can operate at a loss, they may be inefficient. The presence—or absence—of Government subsidies also may have important impacts. Without subsidies, prices may be higher and competition therefore less effective. Yet service may be overexpanded if subsidies are provided. And finally, limiting the subsidy or restricting the scope of even an unsubsidized enterprise, such as to a given territory, may lessen the degree of direct competition and thus detract from the primary objective.[22]

For example, the lower prices charged by the TVA and the Power Authority of the State of New York may have improved the performance of adjacent regulated private firms. One mechanism of competition was threatening to enter adjacent territories.[23] Some writers have claimed widespread positive effects of such competition, of both the direct and yardstick types.[24] The evidence for such a position is both mixed and anecdotal in nature.

European cases provide other examples, including Finsider in the Italian steel industry, ENI in the Italian petroleum industry, and Renault in the French automobile industry. With government support, Finsider not only built modern plants of its own but also forced other producers to follow, enabling the industry to meet international competition.[25] While this may be an achievement, it is not clear that simply removing trade protection or assisting private enterprise could not have had the same results.

In the Italian oil industry ENI, a government firm, explored, innovated, and effectively competed against the large international companies.[26] Sheahan notes "ENI's course was exactly the antithesis of that of public enterprise in the French petroleum industry: where the French public firms acted as passive participants in that country's cartel, ENI went out to take over markets and upset the international oil industry as much as it possibly could." [27] The company may have competed in a "predatory" fashion, selling gasoline below cost, and covering the loss out of natural gas revenues.[28] This could be justified by

[21] Report of the Select Committee on Transportation—Routes to the Seaboard, 43d Congress, 1st session, Senate Report 307, Washington, GPO, 1874. For discussion see James R. Nelson, op. cit.

[22] The technical reason for this is that competitive restraint comes from the ability to expand output in response to monopoly pricing by others.

[23] William G. Shepherd, "British and United States Experience," in W. G. Shepherd, ed., op. cit., pp. 115–116.

[24] See, particularly Richard Hellman, Government Competition in the Electric Utility Industry: A Theoretical and Empirical Study (New York: Praeser Publishers, 1972).

[25] John B. Sheahan, "Experience with Public Enterprise in France and Italy," in William G. Shepherd, ed., op. cit., p. 136.

[26] Ibid, p. 137.

[27] Ibid, p. 137.

[28] Ibid.

needs to shake up a lethargic domestic industry or to disrupt collusion by foreign supplies.

Expropriated in 1945 because of its owners' World War II collaboration with the Germans, Renault, the largest French auto maker, is still a public firm.[29] Renault's share of French production rose from about 15 percent in 1938 to 30 percent in 1950 and 40 percent in 1960. In part this growth occured under government mandate to expand as an aid to postwar recovery. Expansion in the automobile market, as opposed to trucks, was directed by aggressive management which opposed government requests for restraint.[30] It appears that this growth was largely due to product innovation, concentration on low and moderate cost models, and cost controls perhaps more stringent than some of its private rivals. Possibly, tariff protection may have caused inefficiency and torpor among Renault's rivals. While initial small car efforts were in part a result of conscious government policy, more recently Italian and German competition appear to have forced the firm to behave much like a successful private competitor.[31]

Public enterprise competition has been proposed for the U.S. petroleum industry. In 1974, Representative Michael Harrington proposed a "Federal Oil and Gas Corporation," to develop publicly owned gas and oil resources.[32] One of the stated goals of the Corporation was to "* * * develop oil and gas rights to stimulate maximum economic competition in various aspects of the petroleum business." The Corporation was to have certain advantages, including exemption from lease payments and Federal taxes. These and other advantages lead to questions about competitive effect. While there is no reason to expect such a corporation to be more efficient than private oil companies, its advantages could lead it to become the only developer of Federal petroleum resources.[33] It is not apparent that this would be procompetitive. Under present conditions, the price of crude petroleum is essentially determined by OPEC, so it is difficult to see how crude oil competition would be substantially affected.[34] As was the case with oil import quotas, there might be pressures to set a low price for the Corporation's product and grant disproportionate shares of its output to smaller refiners. This could encourage the growth or survival of inefficient refiners. If, despite OPEC's apparent control of crude prices, independent refiners did not enjoy nondiscriminatory access to crude, such allocation could improve their competitive position. But it does not appear that government ownership is required to obtain this objective.[35]

The mixed experience described above indicates that public enterprises cannot be fully relied upon to be vigorous competitors. Energetic,

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[29] Wilcox and Shepherd, op. cit., p. 546; Sheahan, op. cit., 138.
[30] Sheahan, op. cit., p. 138.
[31] Wilcox and Shepherd, op. cit., p. 546.
[32] H.R. 12104, 93d Congress.
[33] This point is made in U.S. Senate, Committee on Interior and Insular Affairs, Federal Leasing of Petroleum on the Outer Continental Shelf, Committee Print, 94th Congress, 2d Session, 1976, (prepared by the Congressional Research Service, Library of Congress), p. 44.
[34] A very low cost discovery could break OPEC.
[35] See U.S. Senate, Committee on Interior and Insular Affairs, *Federal Leasing . . .*, op. cit., pp. 43–44. The special case study prepared for the Committee notes that much of the FEA's oil pricing and allocation regulation has had similar aims. See W. D. Montgomery, "A Case Study of Regulatory Programs of the Federal Energy Administration," in the Appendix to this volume.

aggressive, and politically secure managers, such as those who have at times headed Renault and ENI, may attain such results. But there are few direct economic incentives to compete energetically; sustained vigor may require continuous, detailed oversight—in other words, regulation. And the history of regulation in the United States indicates that regulators are enamored neither of competition nor the risks it may present to their charges.

5. Public enterprise to insure proper use of natural resources

As discussed above, when private firms use a "common pool" resource such as an oil reservoir, a lake (as for fishing or effluent disposal), or the radio frequency spectrum, independent competitive behavior may cause excessive extraction rates, pollution or interference. Such problems are now dealt with by various forms of regulation. They might also be resolved by public ownership of the relevant facilities or the firms using them. For example, enforcing a system of charges for discharges into a lake or river is, in effect, like declaring government ownership of that resource. The same could be true for mineral deposits. Performance would be determined less by the fact of government ownership than by the "rules of the game"—by the regulations or pricing rules followed by the enterprise in question.

The radio frequency spectrum is one example of such a problem. As discussed above, FCC frequency allocation and technical regulation now serves to reduce interference and thus increase the value of this resource. Other nations have adopted complete or partial public enterprise solutions. In principle, such public enterprise can deal with another problem of broadcasting—provision of an efficient mix of program types and qualities. With a substantial popular interest in entertainment shows of mass appeal, and much smaller audiences for other types of programing, there is a profit incentive roughly to duplicate popular offerings to obtain shares of the mass audience. Consequently, some segments of the audience may remain unserved. Greater expansion of the number of channels as well as wider use of cable television could help alleviate this problem. A further alternative would be private monopoly operation of the broadcasting system: a monopoly would have no profit incentive to unduly duplicate programing, and would instead attempt (under the U.S. system of commercial television) to maximize profits from the system as a whole. Roughly, this would mean attracting the maximum audience.[36]

Private monopoly of broadcasting may not be a politically or socially acceptable solution. In this country freedom of speech considerations and traditions of private operation have restricted the direct Government role in broadcasting. An alternative, chosen to greater or lesser extent throughout the world, is state monopoly or a mixed private-public system. Choices of the ownership mix was not based on assuring maximum program variety consistent with spectrum allocations. In fact, casual observation, and the success in Britain of commercial television and American programing, indicate

[36] This argument is presented in Peter O. Steiner, "Program Patterns and Preferences, and the Workability of Competition in Radio Broadcasting," *Quarterly Journal of Economics*, Vol. 66 (1952), pp. 194–223. The argument assumes that consumers do not care about "slight" differences among shows. But the differential success of e.g., apparently similar police or comedy shows calls this assumption into question. The tendency to "duplicate" undoubtedly remains.

the purpose may have been to assure programing considered "appropriate" by the authorities. The United States now has a mixed system including a relatively small noncommercial sector with partial Federal financing.

Some form of noncommercial broadcasting could increase the efficiency of use of the broadcast spectrum. Public television now provides some such service, though the inability to collect from all those who benefit may reduce supply and program quality.[37] This argument depends heavily on a scarcity of spectrum and on inability to collect from viewers. As cable television makes more channels available at lower cost, or as technology improves, it will pay to serve smaller audiences. Pay cable or broadcast television, allowing direct financial support from viewers, would enhance this effect. Since broadcasts are essentially "public goods" available to extra viewers at no extra cost to producers, there can be some inefficiencies in excluding those not willing to pay. Public television may then be appropriate for programs which could be commercially viable if there were no costs of excluding nonpayers. Public subsidy may be appropriate for shows such as "Sesame Street" which produce external social benefits, such as in improved literacy. On the other hand, pay television may be inappropriate for such programing, as the poor might thereby be excluded.

Public enterprise could also be used to control the use and capture the return from natural resources, which are particularly important to the national income or security. Thus, principal mining operations in some less developed countries—such as copper in Zaire and tin to Bolivia—are public enterprises. Such Government control may be considered necessary for full national sovereignty. Although the United States is not presently so dependent, it is not inconceivable that such considerations may in the future lead to public ownership or production of certain national resources.

6. Public ownership to deal with destructive competition: Rationalization and revitalization of sick industries

As discussed above, in industries with immobile resources, excess capacity may persist for long periods of time. Prices may be volatile and on the average depressed. This need not be of direct economic concern, for if excess capacity is present, the efficient solution is low prices encouraging intensive use until price falls below available cost. Those situations can lead to demands for governmental price fixing, subsidy trade restrictions, and other forms of protection and relief. Partial or complete public ownership can give the government leverage to shut down unneeded capacity. Access to subsidies, and the ability to maintain unprofitable services for substantial periods, can ease the rationalization effort. The main problem with the use of public ownership to rationalize capacity is that subsidies may become permanent, and large portions of the industry may become permanent public charges.

Much nationalization in Italy came out of depression and the needs of wartime recovery. As discussed above, Finsider and ENI appear to have made contributions to revitalizing the steel and oil industries, respectively. An intensive study of the depressed British coal indus-

[37] Advertiser-financed commercial television faces the same type of problems.

try led Shepherd to conclude that the Coal Board had generally made rational decisions about mine closings and operations.[38] But as for the superior "social" awareness or performance of the Coal Board, Shepherd notes:

> * * * the really difficult problems and debatable decisions have arisen * * * in those areas where pit closures often have social impacts far exceeding the gains to the Coal Board.[39]

Shepherd found substantial rates of return to investments in rationalization, and judged the return sufficient to cover what the funds might have earned elsewhere.[40] Investment appeared to be differentially channeled to the lower cost mines, as required for efficiency; and such investment did tend to increase profits. However, it is not apparent that private firms could not have obtained the same results at lower total cost.

As discussed below, in part because of its perceived usefulness as an instrument of other policies, public enterprise is not always a viable instrument for rationalization of sick industries.

7. Public enterprise and external costs and benefits

Many Government enterprises can or do provide services which confer external benefits. Some of these services could be or are now provided by regulated private enterprises. That is not true in every case. For example, Government insurance programs for banks and savings and loans, as well as the Federal Reserve System, can be viewed as assuring a well functioning monetary and credit system. Private providers would not be able to capture the full gains in terms of increased ease of commerce and improved allocation of credit, as these are widely diffused throughout the economy and so would provide too little service. Bank failures hurt many more people than just the bank stockholders, so Government insurance is much more credible for what is inherently an uninsurable risk. Another example would be urban commuter transportation, which is provided by a mix of generally regulated private firms and public enterprises, typically at the local level. In some areas such enterprises may be natural monopolies. Availability of high quality mass transit at low prices might reduce automobile traffic, and hence congestion and pollution. Today those enterprises usually are subsidized. Regulation could be used to moderate pricing, and take account of these externalities, while containing the size of the subsidy. Public enterprise could accomplish the same goals and could more directly improve service quality. At the Federal level, an analogy might be made with railroad vs. truck transport. Improving rail service might lessen highway congestion and truck use and reduce petroleum consumption and, hence, dependence on foreign oil. Regulation by itself could have little impact on this problem; public enterprise or other subsidy could.

River basin development by the Department of the Interior's Bureau of Reclamation and the Army Corps of Engineers provide another example in which public enterprise may be justified by the importance of external costs and benefits. Dams on the Columbia River provide

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[38] William G. Shepherd, "Cross-Subsidization in Coal," in R. Turvey, ed., Public Enterprise (Middlesex, England: Penguin Books, 1965), p. 346.
[39] Ibid.
[40] Ibid., p. 345.

not only electricity but also flood control and irrigation. These benefits are widely diffused; it would be very difficult for a private enterprise to fully collect the value of the service. Thus, full private enterprise might underprovide such services. In addition, upstream dams assure a more stable flow and, therefore, more power out of the river downstream. There is a case for developing a river basin as a whole. Private enterprise may be unable, or unwilling, to organize such projects. Therefore, some form of Government intervention is justified. That, however, need not mean public enterprise is the best option. One alternative would be subsidies to private firms, perhaps administered under competitive bidding arrangements. Yet especially for projects of vast scale, such as the initial TVA, the Federal coordination and regulatory role would necessarily be so large as to render the effort essentially a public enterprise. Again, the risk here is of excessive investment in such projects, as they are not subject to free market pressures.

Public ownership does not seem appropriate as a treatment for general problems of pollution, health, and safety affecting a wide range of industries. Agencies specializing in environmental or health and safety problems are more likely to develop the expertise necessary for effective functioning. Yet, some activities may be fraught with such perils and risks to third parties that public enterprise becomes a desirable solution. One example is the FAA-operated system of airways and air traffic controllers, discussed above. Theoretically, private firms could provide air traffic control services. But it is obviously important that all planes be guided by a coordinated air traffic control service. Conceivably private firms could do so on contract, but given the need for a common core of training and expertise, centralization may be appropriate. Government operation is one way to assure this.

Another example is the production, distribution, and accounting for enriched uranium. At present all reactor fuel (and weapons grade nuclear material) is manufactured in three Government-owned gaseous diffusion plants operated under contract by Goodyear and Union Carbide under cost-plus-fixed-fee management contracts.[41] The three plants are huge, and capital intensive, and involve the use of secret technology. Private operation seemingly could be justified by efficiency motives, with public ownership and control mandated by concern over the secrecy of militarily significant technology as well as safety and security. But, in considering the possibility of private development of the next increment of enriched capacity, the General Accounting Office concluded that ownership status would have no significant effect on the probability of theft or accident.[42] Any private facility would be heavily regulated. The cost coupled with the nature of current contracts greatly lessens any possible efficiency gains from private operation. Public ownership has been justified on the grounds that the Government may more easily absorb the risks of developing an untried technology important to the national defense. Another motive may have been to subsidize and promote nuclear development in a relatively unpublic manner.

[41] See U.S. General Accounting Office, "Evaluation of the Administration's Proposal for Government Assistance to Private Uranium Enrichment Groups," Oct. 31, 1975, p. 2.
[42] Ibid., pp. 29–31.

If energy technology evolves toward fast breeder reactors generating large amounts of plutonium, public ownership might again be justified by concern with safety and security. On purely logical grounds, no inherent safety or security advantage can be claimed for Government ownership. But this highly sensitive area involves not only external economic and health consequences but also national security and basic foreign policy considerations. In such cases the instrumentality operating the facilities must and, perhaps should be, politically responsible. Such political responsibility could be achieved in a number of ways, but public ownership may be the most direct way of assuring this desired responsibility.

8. Public enterprise for equity and other social reasons

Thus far public enterprise has been discussed largely as a solution to some of the economic problems or "market failures" which may prevent unregulated markets from producing efficient results. Public enterprise can also be adopted to serve the full range of other regulatory purposes as well as to redistribute income. These purposes include provision of service to small communities, promotion of key industries, and avoiding windfall profits. Several factors contribute to these "social" uses of public enterprise. First, since pricing and investment are in principle under government control, various forms of cross subsidy can be arranged—but in the long run only to the extent that monopoly profits are available to do so. Second, subsidy to public enterprise may be more easily obtained and less restricted and controversial than subsidy to private enterprise. Subsidies may take many forms including direct cash payments, tax concessions, loan guarantees, or grants of land. As discussed above public enterprise managers will have motives of their own, and governmental supervision cannot be complete. Therefore, it is not clear that all of the observed effects of public enterprise are, in fact, desired by citizens at large. Such effects include uniformity of prices relative to private enterprise in equivalent positions, and different and perhaps lower product quality. It is important to ask whether, considering its potential for inefficiency, public enterprise is the best mechanism for achieving any particular social or noneconomic end. The picture is of course quite varied. Problems include the lack of market pressure for efficiency, susceptibility to various forms of political pressure, and lack of clear legislative definition of the social or "noneconomic" purposes to be achieved. There are exceptions. As noted above, the TVA was formed not only to control floods and generate power, but also to lead economic development of a depressed area.[43] In the power field, at least, TVA appears to have been efficient. Yet is is not clear that regional development proceeded more rapidly than it might have had equivalent funding been made available to private enterprise. Under conditions of the times this would have been unlikely.

A wide range of services—from sewage and garbage disposal to libraries—are generally provided by local public enterprise. Equity considerations are paramount, often overlapping with concerns about external costs or consequences. Some of these services are natural monopolies. In the case of libraries and schools, service is provided free

[43] Wilcox and Shepherd, op. cit., p. 556.

to all because of a public commitment to equal opportunity. Public ownership and financing permit this. In the case of garbage and sewage disposal, community health and fairness may dictate provision to all. Sewage disposal may be a natural monopoly, but in some cities private garbage collection services compete. The flat charges made are seen by some as fair as they do eliminate the need to expend resources metering usage. To the extent that the enterprises involved heed economic incentives, service to the higher cost users may decline. Cross subsidy is inherent in such pricing schemes. This may be desired by taxpayers, but the amount and direction of subsidy is not subject to review during the budgetary process as are most direct subsidies. Government operation of such systems is made more important by the need for coordination with other government activities affecting land use, pollution, and ecology. But these problems could be handled by zoning and other land use policies as well as other policies aimed more directly at those related problems, though widespread variances could prevent success.

Public enterprise can help insure service to small communities. Such service is motivated by considerations of equal treatment, though in economic terms the result is likely to be discriminatory. With or without regulation, private enterprise would presumably be willing to supply service provided there was a sufficient market to cover costs. What are the merits of public ownership as compared with direct subsidy or cross-subsidization within a regulated sector? Overt subsidy is visible, subject to greater oversight, and does not encourage the enterprise, whether public or private, to justify protection of monopoly privileges by the need to cross-subsidize. However, policy makers might see some advantages to cross-subsidization within a public enterprise. Budgetary expenditures are reduced, and citizens may perceive relatively equal rates as equal treatment. Of course, if costs are unequal the perception is inaccurate and the results may be inefficient. And the incentives of the enterprise to maintain service quality must come largely from the political process, and not from the automatic and constant pressure of the market.

a. The U.S. Postal Service: Cross-subsidy by public enterprise

Basic postal services are public enterprises throughout the world. Originally a separate department directly responsible to the President, the Postal Service was established as an independent public corporation in 1971. Rates are regulated by an independent Postal Rate Commission. In postal affairs, the rationale for public enterprise has changed with the passage of time. Early in the country's history, postal communications had a special position. "In the absence of modern means of communication, it afforded the only tie that bound the country together, uniting the wilderness with the capitol, scattered settlements with centers of trade and finance. It contributed to a sense of national identity, to economic and political unity . . . today the Post Office is one of the many media of communications." [44] Perhaps, considering the relatively primitive state of technology and the inherent risks, only the government would have been willing and able to provide nationwide service. And the role of the Post Office in providing universal service in a coordinated manner was con-

[44] Wilcox and Shepherd, op. cit., p. 567.

sidered important to national development. Since delivery service may have been a natural monopoly on many routes, some form of social control was probably necessary. Even so, the early success of the Pony Express in providing faster service raised questions concerning many of those motives. Today, electronic and other media provide alternatives and the only remaining natural monopoly element may be local pickup and delivery.[45] Even in this environment, official postal service is frequently so slow that businesses and other large mailers often resort to other media.

Postal rates are uniform with respect to distance. This implies a cross subsidy from low- to high-cost users or from users on high-density urban routes to rural users. It might well be very costly to calibrate rates to approximate costs. When uniting the Nation, assuring uniform pricing of the only effective means of long-distance personal communications may have been appropriate. This might appear particulary appealing if the subsidy were generally from rich to poor or from advantaged to disadvantaged. At present the situation is not so clearly defined.

The Postal Service's legal monopoly is over parcel letter service. Private express companies, such as United Parcel Service, compete effectively in some other areas. That the private sector is able to do so, despite substantial apparent cross subsidy from first-class rates, may be an indication of inefficiency of the Postal Service.[46] The cross subsidy policy may ultimately be self-defeating, because high rates discourage use of first-class service and, as happened with the railroads, decrease the potential fund available for cross subsidiy. The present rationale for this form of cross subsidy is unclear. Subsidy to educational activities including books, newspapers, and magazines might appear desirable. But the bulk of mail including first class is business oriented, and it is unclear why distribution, rather than the production of such products, is subsidized. Low business rates subsidize advertising and other promotions. The Postal Reorganization Act of 1970[47] required that rates be set so that "revenues from each class of mail (except for a few public service categories) cover the costs that could be attributed or reasonably assigned to that mail class."[48] Subsidy was to be gradually withdrawn from periodicals and a $920 million appropriation was authorized to maintain otherwise uneconomic service in small communities.[49]

But the framers of the Postal Reorganization Act of 1970 were not entirely put off by cross subsidies among the various classes of mail. The Conferees for the Senate and House of Representatives, for instance, wrote that attributable costs, aside from fixed costs, were to be those that varied over the "short term" in response to changes in volume of a particular class.[50]

The Conferees, then, disagreed with the long-run standard championed by the former Chief Administrative Law Judge of the Postal Rate Commission in his initial decision.[51]

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[45] Ibid., pp. 556–568.
[46] Wilcox and Shepherd, op cit. p. 566–570.
[47] Stat. F19 (August 1, 1970).
[48] American Enterprise Institute, "Postal Service Legislative Proposals," Washington, D.C. : American Enterprise Institute, 1977, p. 3.
[49] Ibid.
[50] The Statement of Managers on the Conference on PRA 1970 at p. 87.
[51] Record, PRC R7T–1, I–17.

Earlier, the 1968 President's Commission on Postal Organization, whose report was instrumental in the movement toward postal reorganization legislation, envisioned a pool of institutional costs to be allocated on noncost bases at 40 to 50 percent of the total.[52]

Some observers argue that the legislation has not been followed. One commentator notes ". . . the Postal Service has almost seemed determined to avoid compliance with the Postal Reorganization Act and to continue instead with the cross subsidization practices common before 1970." [53] Court decisions have held that Postal Service practices did not comply with the law.[54] Also the Chief Administrative Law Judge of the Postal Service noted "... (t)he Postal Service has become a tax-collecting agency, collecting money from first-class mailers to distribute to other favored classes." [55] That decision noted that many other classes of service were priced below cost.[56] This conclusion is supported by detailed analyses of postal rates and costs, which indicate that, even including specific subsidies from the Treasury, revenues from second-, third- and fourth-class mail fell far short of the costs of providing the services.[57] One possible solution would be to repeal the private express statutes,[58] and allow other firms to compete for first-class mail. This would lower the ability to cross subsidize and encourage efficiency. It would also require premium charges for costly service such as rural delivery.[59] Yet the fact that Postal rates remain unaligned with available costs and are structured to benefit non-first-class users make such action unlikely.[60]

Congress has also provided direct postal subsidies, which have fluctuated around $1.5 billion per year since the reorganization, declining from about 22 percent to about 10 percent of the total postal appropriation.[61] Of course with inflation the real value of this subsidy has further declined. Given the postal rate structure it appears that much of the subsidy is going to business users—even though proposals for postal subsidy are typically tied to public service rationales, including service to small communities.[62] The Carter administration has approved increased subsidies, noting that extra revenues should come from higher rates and better service.[63] Arguments for continuing direct subsidy are similar to those for maintaining the Postal Service legal monopoly of first-class service. These include assuring equality of service regardless of location.[64]

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[52] "Toward Postal Excellence", report of the President's Commission on Postal Organization, 1968, p. 131.
[53] Ibid., p. 5.
[54] Association of American Publishers, Inc. v. Governors, U.S. Postal Service, 485 F. 2d. F68 (D.C. Cir. 1973) and National Association of Greeting Card Publishers v. U.S. Postal Service (D.C. Cir. 1976).
[55] Chief Administrative Law Judge's Initial Decision, Postal Rate Commission Doriset R74–1. Vol. 1, (May 28, 1975), pp. 12–13.
[56] Ibid.
[57] George M. Wattles. "The Rates and Costs of the United States Postal Service," Journal of Law and Economics. Vol. XVI, April 1973, p. 113.
[58] 18 U.S.C. 1694–96, 1970; 39 U.S.C. 601–06 (1976).
[59] George W. Wattles, op. cit. p. 116.
[60] Wattles notes other possible options. These include ending USPS service on second-, third-, and fourth-class mail and adjusting relative rates toward costs. Given the history of legislation and USPS behavior and the substantial subsidies involved both appear unlikely.
[61] New York Times, March 4, 1976, p. 1.
[62] American Enterprise Institute, "Postal Service Legislative Proposals," op. cit., p. 17.
[63] Ibid., pages 17–18.
[64] Ibid., pages 33–34.

b. Use of public enterprise to achieve social purposes: European examples

Foreign examples are illustrative of the potential range, as well as successes and pitfalls, of social purposes. Early British railroad legislation was based on the principle that, if an industry became too profitable, the public should have the right to acquire it.[65] This method of dealing with monopoly profits is an alternative to price controls. Taxation is another option and could avoid some of the incentive effects of potential nationalization.

Until relatively recently the British Post Office was regarded as an agent to make profit for the Exchequer.[66] If pushed to extremes, this could result in monopoly pricing and discrimination by publicly franchised monopolies. Were other government programs to become dependent on the revenue raised, the suppression of competition could be even more complete and uneconomic than that practiced by the ICC and other regulatory agencies.

Much post World War II public enterprise in France came from a desire to avoid a return to the prewar form of government protected noncompetitive capitalism.[67] Other goals included increased social control of industry and use of public enterprises as instruments of planning for rapid modernization in basic sections of the economy.[68] Nationalization included major banks, leading groups of insurance companies, coal mining, electricity and gas production, and the Renault automobile company. Public firms in the French petroleum industry have been used as part of a system to insure government control of supplies. But the leading authority notes "* * * the important consideration is the measure of public enterprise. Its effect was to maintain a cartel system at the expense of the rest of the economy." [69]

Both France and Italy use public monopoly of tobacco products as a source of government revenue, thereby discriminating against foreign products.[70] Because of policies of encouraging regional development, France has a number of inefficient cigarette plants.[71] Other effects are more mixed. Neither French nor Italian tobacco firms engage in heavy advertising. For example, in 1969, French tobacco advertising was about 0.3 percent of sales, compared with 2.6 percent in the United States. But cigarettes produced by the public firm in France contain no health warnings at all.[72]

While French public monopoly of electric power appears to have performed well, the telephone system has not. For example, in 1963, the French system compared with Sweden used 3.3 times as many workers to handle 23 percent fewer calls.[73] One of the main reasons appears to be that the French Post Office, which operates the telephone system, has never considered purchasing equipment from non-French suppliers. Not only did this allow producers to take advantage

[65] James R. Nelson, in W. S. Shepherd, op. cit., "Public Enterprise," p. 52.
[66] J. K. Horsefield, "British and American Postal Service," in R. Turvey, ed., "Public Enterprise," op. cit., pit. 305.
[67] John B. Sheahan, "Experience with Public Enterprise in France and Italy," in W. G. Shepherd, ed., Public Enterprise, op. cit., p. 124.
[68] Ibid., p. 125.
[69] Ibid., p. 140.
[70] Ibid., p. 141.
[71] Frederic M. Sherer, "The Economics of Multiplant Operation," Cambridge: Harvard University Press, 1975.
[72] Sheahan, op. cit., p. 153.
[73] Ibid., p. 152.

of their market positions, but the government actually aided monopoly behavior by allocating market shares.[74]

c. The need for explicit definition and funding of public enterprise social services

It appears that public enterprise monopolies are particularly susceptible to such pressures. As Sheahan notes, with respect to the French telephone system "* * * no private system would have accepted the restriction to high-cost suppliers to this degree. Neither would Renault or the other public firms that must compete. But public monopoly is extremely exposed to imposition of such special interest favors * * *" [75]

The experience of the French railroads, burdened with special pension and others costs, is consistent with this.[76] Over time the cost of these burdens has increasingly been sustained by explicit special appropriations.[77] Such direct funding for certain predetermined goals has become more common in other countries. In France, the so-called Nora Report, issued as part of the preparation for the Fifth Plan (for 1966–70) noted that subsidies to public enterprise had risen to 6.8 percent of the national budget.[78] The report argued that such subsidies should be restricted to social services, explicitly planned for in the first instance.[79]

The "Nora Report" recommended that public enterprise prices should be set to provide a reasonable return after adjusting for specific desired social services. This would seem to avoid situations whereby public enterprises, themselves, decide on the levels of cross-subsidy in relationship to service, without specific legislative guidance. As discussed above, the performance of the U.S. Postal Service serves as an illustration of this problem. According to the "Nora Report," on the order of 60 percent of the subsidies could be viewed to have clear social purposes, while 40 percent were "largely blind transfers, for which intentions are not explicit and the beneficiaries poorly known." [80] In such situations it becomes very difficult to appraise public enterprise performance. If public enterprise or, indeed, any enterprise or government agency, engages in a policy which benefits some group, that group will come to expect that benefit. As in the case of prices fixed above the free market equilibrium, entry and expansion will tend to take place until all are just making normal returns. Making a change at such a point will be most difficult, as individuals and firms may, in a sense correctly, see that, while they have gained relatively little from the current policy, they have much to lose from change.[81]

Public enterprise may indeed be an effective vehicle to achieve various social purposes. But following the basic recommendation of the "Nora Report" would seem to encourage efficiency and minimize other problems. This recommendation is, "Truth in pricing, with prices related to costs, and with social functions delegated to firms

[74] Ibid., p. 152.
[75] Ibid., p. 152.
[76] J. R. Nelson, op. cit., in appendix to this volume.
[77] Ibid.
[78] Sheahan, op. cit., p. 156.
[79] Ibid.
[80] Sheahan, op. cit., p. 157.
[81] See Gordon Tullock, "The Transitional Gains Trap," op. cit.

paid for by specific subsidies." [82] Coupled with a clear definition of social functions—for example income redistribution in specified amounts to well-defined groups, or promoting regional economic development in a defined way—public enterprise may be able to perform some social tasks effectively and efficiently.

F. Municipals, Cooperatives, and Common Carrier Transmission as Alternatives to Gas and Electric Utility Regulation

A variant of public ownership are those local utilities, owned and operated by municipalities or cooperative systems. Today about 18 percent of electric power sales in the United States are made by such systems,[83] somewhat concentrated in the areas where federally-generated power is available. Municipals account for 5 percent of total gas [84] sales and for the bulk of the Nation's water sales.

A variety of tax concessions, which are a form of subsidy, allow municipals and cooperatives access to capital at low rates, and that is very important because utility industries are so highly capital-intensive. Subsidies do allow cooperatives and municipals to charge lower rates than investor owned utilities in similar situations. These rates reflect a transfer from taxpayer to electricity and other utility users. Interest on municipal bonds is exempt from Federal income tax, and thus funds are available at interest rates below those of privately owned utilities. Cooperatives can borrow from the Rural Electric Administration at 5 percent, far below private bond yields. In addition, neither municipals nor cooperatives pay corporate income tax, and both have preferential access to cheap Federal power—all of which involves Federal subsidies, whether direct and indirect.

The subsidy distinction aside, publicly owned utilities share significant similarities with private competitors. Cooperative, municipal and investor-owned utilities utilize basically the same resources, equipment and personnel expertise to provide a given level of service. Thus shifting the entire electric power industry in the United States to municipal or cooperative ownership would not, in and of itself, free real resources for other uses. It is possible for municipals and cooperatives to be more, less, or equally efficient as regulated investor-owned utilities. For municipals the result will depend on the balancing of Avech-Johnson tendencies to rate-base expansion and other regulatory effects against the loss of economic incentive inherent in public ownership. Cooperatives may preserve some economic incentives for efficiency, but, as with municipals, groups may quite rationally tolerate some inefficiency in order to gain very substantial tax advantages. This cost, if it exists, will not be reflected in electricity bills, but rather will contribute to lower availability of revenues for other government services and uses, and higher taxes.

Publicly owned utilities have disadvantages also. Typically they are far too small to be efficient generators of electric power. Thus one drawback of municipals and co-ops in electric power is that, unless Federal power is available, they must usually buy power from a monopolist—the privately owned utility in whose service area they are

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[82] Sheahan, op. cit., p. 157.
[83] American Public Power Association, *Public Power*, Jan.–Feb. 1976, p. 32.
[84] Telephone Communications with the American Gas Association.

located. In the past, investor-owned utilities have refused to wheel.[85] In addition, they have often declined to permit municipals to participate in power pools. As a result, municipals and cooperatives have often paid more for bulk power than investor-owned utilities. Under recently passed legislation FERC now has the authority to order wheeling.[86]

The combination of relatively high bulk power rates and subsidized capital costs has led many municipals and cooperatives to install their own generating facilities. This is usually inefficient because most municipals and cooperatives are too small in scale to install a generating plant of optimal scale. In recent years court actions and Federal policy pursuant to the antitrust laws has improved the situation.[87]

In some cases municipals and cooperatives suffer no inherent scale disadvantage in distribution, because distribution costs do not vary significantly with the size of service area.[88] The electric power generation industry could be fairly competitive in many parts of the country, if wheeling were compulsory and if distribution systems were independent of the generation systems. The growth of cooperatives and municipals could tend to bring this about.

Because of scale economies the natural gas pipelines are monopolists in most consuming areas: They buy gas in the field, which is then transmitted through their pipelines and subsequently resold to distribution companies. In contrast, oil pipelines transmit but do not own petroleum, and thus are classed as common carriers. If gas pipelines were similarly classed as common carriers, distribution companies could more easily compete in the purchase of gas from thousands of gas producers.

It appears altogether possible to have fairly competitive natural gas production and electric power generation industries if transmission of gas and electricity were classed as common carriers, and if the ownership ties of electric power distribution to the generating companies were broken. Regulation would continue to be required for transmission lines, pipelines and local distribution systems, to the extent that they remained in private hands; but competition and municipal or cooperative ownership could obviate the need for regulatory controls in the largest parts of the electric and gas industries.

There seem to be few, if any, technical barriers to such a reorganization of the electric and gas industries. In the Pacific Northwest and the areas serviced by TVA distribution is largely handled by municipals and coops and most generation and transmission is operated by

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[85] Wheeling involves the transmission of power generated by Company A to user Company B over transmission lines owned by Company C. Company B pays Company A for the power. Company C receives a "wheeling charge" for the use of its transmission facilities. This is quite different from the case where A sells powers to C and C sells it to B. In such a case C would retain its monopoly power.

[86] See Department of Energy Office of Public Information, "The National Energy Act": Nov. 1978.

[87] In *Ottertail Power Company* v. *U.S.* 410 U.S. 366 (1973) an investor-owned utility that refused to wheel power to a municipal within its service area was found guilty of monopolization under Section 2 of the Sherman Anti-trust Act. But it had also refused to inter-connect and sell to the municipal and had harassed it in the courts. It was the entire pattern of conduct that led to the decision against the private competitor. The Supreme Court stopped considerably short of making utilities into common carriers with an obligation to wheel power at reasonable wheeling charges. More important in practice than *Ottertail* has been the requirement that licenses issued by the NRC under the Atomic Energy Act be "consistent with the purposes of the Anti-Trust laws." Under this provision many agreements to wheel and to interconnect have been negotiated. The main inducement for such agreements has been the fear of delay by investor-owned utilities seeking to build nuclear plants.

[88] Leonard W. Weiss, "Antitrust in the Electric Power Industry" in Almarin Phillips, ed., "Promoting Competition in Regulated Markets," Brookings, 1975, p. 145.

Federal agencies. It appears that in none of these cases has any serious technical disadvantage from the lack of vertical integration been apparent. Much of the purchase of electric power and of gas would undoubtedly be in large blocks for long periods so that the distribution utilities would be protected against interruption, and generation and production companies would be sufficiently assured of sales to permit plant financing. The fact that each such contract would be a unique sale for long term would probably make collusion unlikely. Such an organization of the gas and electric industries would fall far short of nationalization and would actually increase the extent of unregulated competitive private enterprise.

G. Federal Chartering of Corporations

At one time corporate charters imposed extensive limitations and requirements on corporations, but competition among States for corporate charters resulted in the elimination of virtually all such restraints. It has been proposed that all large corporations be required to have Federal rather than State charters, thus permitting the Federal Government to use the charter as an instrument of control. This proposal was popular in the early part of this century, when other means of Government control of corporations were weak, and has retained significant adherents today.[89]

However the benefits of this approach are open to question. Federal chartering as an alternative to regulation necessarily involves many if not all the problems of regulation and seems to offer few distinct advantages. The Federal agency responsible for issuance of charters would be confronted with many of the same difficulties that now beset regulatory agencies. Inevitably charter provisions would be couched in very broad language, the effect of which would in large measure depend on the actions of the administering agency.[90] It seems doubtful that such an agency would be able to do any better than the present specialized agencies. Indeed, problems might be multiplied due to the agency's very broad jurisdiction. Possibly, that jurisdiction would tend to ensure that the agency would be less subject to "capture" by industry. But, for the same reason, the agency would have immense difficulty developing sufficient expertise to deal with its varied constituents.

A less ambitious but more feasible proposal would be to use Federal chartering to impose uniform national corporate law, such as provisions concerning internal corporate structure, stockholders' rights and so forth. Many of these matters are already controlled by the Securities and Exchange Commission. Enforcement of the provisions would be in the hands of a regulatory agency, once more, possibly the SEC itself. The main advantage gained would be uniform corporate law for large firms throughout the country plus any reforms with respect to corporate governance that Congress chose to include in the chartering law.

[89] Ralph Nader, Mark Green and Joel Seligman, "Taming the Giant Corporation," Norton. Their proposal calls for substantial changes in corporate control and structure: the prohibition of inside directors, full time professional directors each on the board of only one corporation, cumulative voting for directors, referenda in local communities on corporate issues important for those commodities, protection of "corporate whistle-blowers", detailed and uniform corporate disclosure, direct rules with respect to mergers and a deconcentration provision calling for the dissolution of leading firms in markets where the four firms' concentration ratio exceeds 50 unless the firms can show that successor firms would be too small for efficiency. *Ibid.* Chapters 4–7. These proposals are too far beyond the ambit of this study to warrant detailed discussion.

[90] The regulatory use of franchises presents similar problems.

Chapter Five

INCENTIVES VERSUS STANDARDS AND OTHER DIRECT REGULATORY CONTROLS

A wide variety of incentive mechanisms could complement or even replace many forms of regulation or direct government intervention discussed thus far. Incentives include direct and indirect subsidies, tax concessions, taxation, insurance, and action to improve information. All of these are intended to encourage and foster an economic environment in which economic decisions made are better tailored to social goals. For the most part, these mechanisms are in contrast with the setting and enforcement of "standards," such as rulings that emissions must not exceed some level or that a product meet certain safety requirements. Incentive mechanisms such as taxes or subsidies are more automatic than a standards-plus enforcement approach. But use of incentives—like the standards approach—requires detection, and measurement of the event or effect in question—whether it be reductions in pollution or freight service to outlying areas. Moreover, unless the penalties (or rewards) associated with violation of (or compliance with) standards are appropriate, compliance may be unsatisfactory. Merely announcing a standard will tend to induce a certain degree of voluntary compliance. However, violations requiring enforcement action will inevitably occur. In many cases the nature of enforcement or the extent of the penalty may provide insufficient incentive for compliance. Thus, merely setting standards without realistic enforcement mechanisms may prove ineffective. This is particularly true in cases such as environmental and occupational safety and health regulation, where regulation must cover millions of pollution sources and workplaces. If compliance costs are high, voluntary compliance will be slight.

Proponents argue that the incentive approach is preferable because it provides firms and consumers with the freedom to adopt the least costly (or most beneficial) way of achieving goals. But it is possible for a standards approach to provide similar flexibility—thus, in that regard, incentives are not the exclusive alternative. To a significant degree, it depends on the type of standard that is used. One major variety is the "specification standard"—a standard which specifies certain attributes of the production or consumption process, such as the height of railings, the design of cars, or type of pollution control equipment. Specification standards direct how something must be done, thereby limiting the ability to choose the most efficient method. By contrast, "performance standards" mandate a level of achievement—miles per gallon or emission levels—thus allowing freedom to choose the least adverse or most beneficial method of compliance. As such, performance standards are capable of yielding a flexibility similar to that of general incentives. Therefore, in that regard, the issue is not "standards" versus incentives, because some of the virtues of the latter may be found in the former depending on the type used.

But, differences between the standards and incentives approaches are deeper. A standard requires compliance by everyone within a named class. Uniform standards, whether of the performance or specification type, coupled with high penalties (such as plant shutdown) could compel compliance even that which is both very costly and minimally beneficial. By contrast, an incentive approach (or, to an extent, a standard with lower expected penalties) would allow firms and individuals to weigh the costs of compliance against the costs of not complying. The EPA experience indicates that [1] standards are not binding and absolute commands. But the stigma of violation may induce compliance even when the social benefits do not outweigh the costs. Explicit incentive approaches can allow a more balanced weighing of the degree of compliance against its cost. They induce the low cost polluters to clean up and leave the high cost polluters paying the tax.

These considerations do not apply only to safety, health or environmental regulation. For example, advocates of continued ICC trucking regulation assert that (presumably unremunerative) service to small communities is required (and provided) as a condition of granting certificates of convenience and necessity. It is not clear, however, that present regulation does in fact induce the provision of such service. Such regulation is equivalent to a performance standards approach, but without specified desired levels of performance. Compliance, if any, will depend on carrier vulnerability to regulatory pressure, and will presumably be very uneven. Some carriers may be unduly burdened, and some communities either underserved or overserved. An incentive approach, providing explicit subsidy (or tax concession) for certain quantities of service would allow carriers more rationally to weigh costs against benefits, and would probably be both cheaper and more effective.

Thus, in comparing "standards" with "incentives" approaches to regulation two basic considerations should be kept in mind. First, the degree of success of standards will depend, to some extent, on the costs of not complying. These costs involve consideration of the probability of detection and anticipated penalties.[2] Second, the effect of standards will depend in part on whether they are of the performance or specification type. Some criticism of the standards approach more aptly applies to technological specification standards. Correctly designed performance standards can be less rigid and can allow lower costs of compliance. Finally, incentives must be properly designed to encourage the desired behavior with minimal undesired side effects. Perhaps most importantly, economic incentives provide a continuous incentive to innovate. And they lessen the probability of confrontation over "noncompliance" and threats to shut down whole industries.

There are many different forms of government incentives to induce certain behavior, as an alternative to more traditional regulatory controls. The major categories of incentives are discussed in detail in the sections that follow.

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[1] See Larry Ruff, op. cit., in Appendix to this volume.

[2] For a discussion of the relatively insignificant inspection probabilities and penalties imposed by OSHA see Zeckhauser and Nichols, in Appendix to this volume.

A. Direct Subsidies as Regulatory Instruments

Direct public subsidies have a long history as instruments of regulatory control. Subsidies, in turn, have in certain instances encouraged or necessitated regulation. An original purpose of CAB regulation, especially regarding route restrictions, was a desire to keep the Federal subsidy to airlines within bounds. Subsidy was used for years to sustain first both trunk and local service lines, and some of the latter are still subsidized.[3] The present range of Federal subsidy programs is vast, including financing medical care to the aged and needy, supporting price levels of agricultural products, and absorbing risk through Federal insurance programs and loan guarantees. All such programs could be broadly classed as regulatory, in that they attempt to induce output, prices or product mixes different than would emerge from a free market environment.

Direct subsidies are those given to a certain group visibly in the form of either cash or valuable resources. The actual subsidies can take a number of forms: Cash, credit, and benefits-in-kind. Credit subsidies involve the granting of loans at below market rates or government loan guarantees. Benefits-in-kind are benefits paid in particular goods and services, such as lower cost food (through food stamps), medical care, subsidized postal service, airport planning grants and other services.[4]

1. The scope of Federal subsidy programs and possible regulatory roles for direct subsidies

Table 5–1 shows total Federal subsidy costs in 1970 and 1975, as estimated by the staff of the Joint Economic Committee.

TABLE 5–1. SUMMARY OF FEDERAL SUBSIDY COSTS

[In billions of dollars]

	Direct cash subsidies		Tax subsidies [1]		Credit subsidies		Benefit-in-kind subsidies		Total order of magnitude	
	1970	1975	1970	1975	1970	1975	1970	1975	1970	1975
Agriculture	4.4	0.6	0.9	1.1	0.4	0.7			5.7	2.5
Food							1.5	5.9	1.5	5.9
Health	.8	.6	3.2	5.8			4.6	10.2	8.6	16.6
Manpower	2.0	3.3	.6	.7			.1	.1	2.6	4.1
Education	1.9	5.0	.8	1.0	.1	.1	.4	.4	3.2	6.5
International	.1		.3	1.5	.6	.9			1.0	2.4
Housing	.1	1.7	8.7	12.9	3.0	1.1			11.7	15.7
Natural resources	.1	.1	2.0	4.1			.1	.1	2.1	4.4
Transportation	.3	.6		.1			.2	1.7	.5	2.3
Commerce	2.0	.3	14.1	19.3	.1		1.8	1.9	18.0	21.5
Other			9.4	13.1	.1	.1			9.5	13.2
Total order of magnitude [2]	11.6	12.3	39.9	59.7	4.1	2.9	8.8	20.2	64.4	95.1

[1] Included for comparison. A tax subsidy is a special law provision allowing an individual or firm engaging in a specific activity to pay lower taxes than he otherwise would.
[2] Individual items may not add to totals due to rounding error.

Source: Federal Subsidy Programs, op. cit., p. 6.

These costs include only the estimated budgetary expenses, forgone tax revenues, and gains to borrowers from subsidized credit. The esti-

[3] See Keeler in appendix to this volume.
[4] For a listing see *Federal Subsidy Programs*. A Staff Study prepared for the use of the Subcommittee on Priorities and Economy in Government, Joint Economic Committee, October 18, 1974, p. 14.

mates do not include any costs from distorted resource allocation or inefficient production, and do not consider any real economic benefits.

Most of the Federal subsidy programs, and the bulk of the expenditures, appear directed at purposes only remotely related to regulation as discussed in this report—such as the correction of monopoly, internalizing external costs or benefits, providing information, and dealing with natural resources monopolies. To the contrary, the lion's share of Federal subsidies are essentially designed to redistribute income to certain groups in society. This is particularly true for agricultural subsidies, food stamps, medicare and medicaid, housing assistance, and many of educational subsidies.[5] However, some have argued that agricultural subsidies and price-stabilization programs are needed to assure an adequate level of investment and supply of products.[6] But the evidence in support of this proposition is very thin.[7] The subsidies may in fact be an alternative to much tighter governmental control of agricultural production and prices—not because of any necessity to do so to insure good economic performance, but because of the desire to assure stable and high incomes to agricultural interests .

How might direct (or, in fact, other types of) subsidies be used as alternatives to present regulation? They may be appropriate in a number of situations. First, when the goal is to increase output (as in the case with regulated monopoly), a subsidy per unit output could induce production expansion toward the competitive rate. This could eliminate output restriction, but it would not serve another major goal of regulation, to wit: constraining excess profits. In addition, it would be difficult to determine the appropriate size of the subsidy. An experimental approach could be attempted, beginning with a small per unit subsidy which was gradually increased. Yet the firm might have a strong incentive to hold back on output increases to induce larger subsidies, thereby increasing the tax burden of the subsidy program. Such a solution to monopoly problems has not been implemented.

Direct subsidy could also be used, in lieu of regulatory cross-subsidy, to provide service which would otherwise be nonemunerative. This is still being done for local service airlines, which have received annual payments of over $70 million in recent years. In transportation, direct subsidization of unremunerative service would have one principle advantage over the present system of cross-subsidization: It might in fact provide increased service to some areas and do so without the distorting effects of present regulation. As discussed above, it does not appear in trucking and airlines that regulation has in fact resulted in substantial cross-subsidy or provision of service which would otherwise be unremunerative.

Some subsidy programs have clearer regulatory purposes. Air pollution manpower training grants ($1.3 million in fiscal year 1975) supplement other Federal efforts in the area; [8] and could substitute for larger enforcement resources. Subsidies to local service airlines ($72.7 million is fiscal year 1975) [9] may be considered a substitute for more

[5] See "Federal Subsidy Programs," Ibid., for a discussion of the scope and purposes of individual subsidy programs.
[6] See Tanya Roberts in Appendix to this volume.
[7] Ibid.
[8] "The Economics of Federal Subsidy Programs," op. cit., p. 56.
[9] Ibid. p. 107.

detailed CAB regulation of airline scheduling. Still another example is the subsidy to Amtrak, which is an alternative to potentially futile attempts to cross-subsidize rail passenger service.[10]

ICC prevention of railroad abandonments has surely provided some cross-subsidy, but perhaps at the cost of deterioration of the rest of the rail system. Direct subsidies to prevent the abandonments might preserve some otherwise uneconomic service while allowing the railroads to invest in more productive areas. The RRRR Act provides for such subsidies.

Subsidies could be used in lieu of price control regulation, designed to protect consumers from the impact of drastic increases as occurred with the OPEC oil price increase or as might occur with deregulation of natural gas or "old" oil. The subsidies might take the form of tax rebates or direct payments. Like price controls, subsidies could have adverse consequences, particularly in regards to scarce resources and products: low prices are thus maintained and wide consumption assured, with enormous waste one of the results. That has occurred with natural gas.[11] A less distorting solution would be to provide payments to all low income or otherwise disadvantaged groups so that the payments did not wholly depend on their consumption of the affected goods. This would somewhat mitigate the adverse effects of the price increase without inducing greatly increased consumption. Still another alternative would be to provide some subsidy in the form of transferable ration coupons allowing the purchase of limited quantities at a reduced price; thereafter, additional amounts would be purchased at the newly higher market price.

Because of the cost incurred, some existing subsidy program impose unnecessarily high costs. For example, the U.S. maritime industry enjoys several direct subsidies which may be of questionable merit and economically inappropriate. The Merchant Marine Act of 1936 [12] authorizes the Federal Maritime Administration to pay "construction differential subsidies" for new vessels built in American shipyards. The amount of the construction differential subsidy can equal the difference between U.S. and estimated foreign ship construction costs, up to a maximum of 50 percent of cost.[13] During fiscal years 1971–75 the Maritime Administration paid $811 million under the program.[14] Over time, defense and national security interests have repeatedly been used to justify this and other subsidies.[15] The shipyard capacity needed for the national defense cannot be easily estimated. But the construction differential subsidy may cause needless inefficiency because of its "cost plus" character. Up to the subsidy limit the ship builder has less incentive to keep costs down because higher costs just mean higher subsidy. Such subsidy program may be justifiable on national security grounds, but the costs are substantial with obligations of over $250 million in 1976, and higher than they would be if

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[10] On Airlines see Theodore Keeler, "The Regulation of Domestic Trunk Airlines, An Economic Appraisal" and on Trucking see James R. Nelson, "ICC Regulations of Surface Freight Transportation," in appendix to this volume.

[11] See Ronald Braeutigam "Natural Gas Regulation," in Appendix to this volume.

[12] U.S.C. per 1151 et seq. (1970).

[13] U.S. Department of Justice, *The Regulated Ocean Shipping Industry,* January 1977, Appendix D, pages 1–2.

[14] See Gerald R. Janscher. "Federal Aids to the Maritime Industries," in "The Economics of Federal Subsidy Programs, Part 6—Transportation Subsidies," a compendium of paper submitted to the Joint Economic Committee, February 26, 1973.

[15] Ibid., p. 2.

not based on the differential between U.S. and foreign costs. Federal branch line subsidies under the Railway Revitalization and Regulatory Reform Act will induce even greater inefficiency, since 100 percent of the overrun for the first year and 90 percent the second year is covered.[16] Subsidy plans requiring substantial cost sharing would mitigate this effect. Title VI of the Merchant Marine Act of 1936[17] authorizes payment of subsidies to cover the differential operating costs of American vessels over foreign vessels. This, too, can lessen incentives to keep down costs.

2. The relative merits of direct and cross-subsidy

Of course, all subsidies can, as intended, result in the provision of service at less than the cost of production. But, unlike cross subsidization, direct subsidies do not necessarily induce further distortion in the regulated sectors and related industries. For example, since 1971, Amtrak has been subsidized at over $100 million per year. The 1976 budget allowed $350 million for operating grants and $110 million for capital grants. It is virtually inconceivable that a subsidy approaching that size could be provided from increased rail freight rates. Had such an attempt been made in the past, the shift to trucking would only have been more rapid, far reaching and possibly socially inefficient. This "purity" or lack of distorting effect of direct subsidies should not be exaggerated; paying subsidies will require tax increases with accompanying effects on incentives and income distribution. And subsidizing the use of a particular input, such as capital, can encourage its costly overuse. Cross subsidies, of course, benefit the recipients of the services at the expense of those paying higher prices. Direct subsidies benefit recipients and service users at the expense of taxpayers. This does not, of course, mean that the tax cost of the direct subsidy will equal the revenue increase required to yield enough of a cross-subsidy to produce the desired quantity of service. To cross-subsidize, regulation must hold some prices above costs. Unless regulatory control is complete, this will induce service competition which will consume some of the revenues potentially available for cross-subsidy. Therefore, per unit service provided, direct subsidy may be considerably cheaper than cross-subsidy.[18]

Subsidy programs cannot totally replace direct regulation. Offering subsidies will induce firms to expand output. If subsidies are given per unit output, unless quantitative restrictions are placed on firms such as by output quotas, production and hence the total subsidy payment may be larger than initially planned. Also firms may enter to capture some of the subsidy, generating pressure for entry controls or other means of limiting payments. This, in turn, can weaken competitive pressure on the incumbents and raise costs. To keep down the subsidy (and hence, tax) burden and maintain efficiency, subsidy programs might be combined with competitive bidding for specified quantities and types of service. The "Air Transportation Act" considered in the 94th Congress, contained provisions to this effect: The CAB would determine the extent to which "essential" levels of air service may (in a substantially deregulated environment) not be available to

[16] Public Law 94–210, section 805.
[17] U.S.C. par. 1171, et seq. (1970).
[18] Of course, the higher quality service induced by high prices presumably has some value to users.

some communities. In cases where such "essential" service may be lacking, the Board would contract with a carrier to provide a specific level of service for up to three years. Selection of a low cost contractor is to be encouraged by competitive bidding; efficiency pressures are to be maintained by the fixed price nature of the contract. These contract subsidy provisions were intended as transitional measures, and are perhaps most appropriate for the interim period during which communities adjusted to the new regulatory environment. Yet, if direct subsidies were desired as part of the permanent environment, contract subsidy bidding could be an efficient method of administration. It should also be noted that the "Airline Deregulation Act of 1978", while continuing the present subsidy program for a period of years, also authorizes that new programs will be based on community rather than carrier needs.[19]

All subsidy programs—and indeed all programs designed to increase output or returns to producers—will tend to create a policy-dependent class of producers. In other words, if the rationale for the subsidy (or other regulation) becomes anachronistic, favored groups will become strong opponents of change. Entry will have occurred and capacity expanded so that most current producers will enjoy at least normal returns on investments. Thus subsidies, as other protections, should be carefully evaluated before being granted. This does not appear to have been the rule in setting up past Federal subsidy programs. In its review of all Federal subsidy programs the staff of the Joint Economic Committee applied three standards:[19a]

> 1. Does the subsidy correct a market deficiency?
> 2. Is the subsidy efficient in terms of the costs required to obtain the desired benefits?
> 3. Does the subsidy distribute its benefits to lower, middle, and high income beneficiaries in a pattern that is acceptable to society?"

Review of the 40 special studies performed for the Committee led to the conclusion that those subsidy-granting standards were not met.[20] For example, capital grant subsidies for urban mass transportation may have involved a waste of over 20 percent, by encouraging overly rapid and unnecessary replacement of buses.[21]

Analysis of Federal housing programs including direct and tax subsidies indicated that more direct assistance was provided to middle and upper income households than to lower income householders; thus the distributional goal of that effort is not achieved. Finally, a review of Federal maritime subsidies noted that—

> [i]t reflects no credit on any of the parties connected with the program [the construction subsidy program] that no public estimates of its cost were ever demanded or volunteered as it moved toward enactment—apart from an obvious fallacious estimate of $1 billion . . .[22]

Without careful consideration, the major benefits of visibility and susceptibility to oversight of direct subsidy programs can become illusory.

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[19] P.L. 95-504, 95th Cong., 2d sess. (1978).
[19a] *Federal Subsidy Programs*, op. cit., p. 1.
[20] Ibid., p. 2.
[21] Ibid., p. 3.
[22] Gerald R. Jantscher, "Federal Aids to the Maritime Industries," op. cit., p. 778.

In summary, a potential advantage of direct subsidies is that the amounts are visible and subject to Congressional review during the budgetary process. This should be contrasted with both cross-subsidy via regulation and indirect subsidy via price control or other grants of privilege which cannot so easily be monitored and reviewed. Also direct subsidies are paid by the general taxpayer, not the users of higher priced regulated services as would be the case with cross-subsidization. General revenue financing might seem appropriate in the case of subsidies justified by certain Federal interests, such as national security. But subsidies are not justified if the potential for general benefit or achievement of a social goal is not clear.

B. Tax Preferences: Less Visible Forms of Direct Subsidy

Manipulation of the corporate income tax can influence rates of investment and production in various industries. Similarly, personal tax deductions or credits can be used to affect consumption decisions. Tax preferences are presently used to encourage investment in the "nonprofit" sectors of the economy including education, health and religion.

The budgetary costs of tax preference are similar to those of direct Government subsidies in cash or in kind. One difference is that if direct subsidies increase firms' profits, part of the initial payment may be returned to the Government as tax revenue. Direct reduction in tax liability does not have this effect but does yield a dollar increased return to the firm per dollar of tax forgiveness. Thus direct subsidies would appear more attractive in terms of impact on the budget itself. The choice between tax preferences and direct or indirect subsidies often seems to depend more on political feasibility and administrative convenience than on any substantive difference. To achieve the same goals as a subsidy program or direct regulation, tax preferences must be calibrated to affect firm decisions. Although subsidies can be given per unit output or service, income tax preferences or credits are more difficult to calibrate in as precise a fashion. One method would be to grant full or partial credit status to expenditures or earnings associated with the desired activity, including tax deferral or accelerated depreciation of equipment. Tax liability can at maximum be reduced to zero, so preferences may not provide sufficient incentive.

Tax subsidies or "expenditures" are the amount by which taxes are decreased below what they would be through "normal" tax treatment of a certain activity. Such expenditures or tax preferences are very substantial indeed .Table 5–2, which contains the most current information, indicates an estimated 1975 total of over $59 billion. Figures published in 1976 by the Senate Budget Committee indicate an estimated 1977 total of almost $104 billion.[23]

As in the case of direct subsidies, this estimate represents only budgetary expenditures and does not include or purport to approximate the real economic costs of the program. For example, the estimated tax subsidy to oil, gas and mineral extraction from "depletion allowances" in 1977 was $1.595 billion. This does not mean that firms saw themselves as earning almost $1.6 billion in "excess profits" from this

[23] Derived by summing 1977 estimates for the 69 programs discussed in United States Senate, Committee on the Budget, Tax Expenditures: "Compendium of Background Materials on Individual Provisions," 1976.

provision or that in 1977 stockholders earned that much higher return from their investments. By lowering costs of operation the special tax treatment presumably encouraged expansion of operations and entry of new firms, driving down the rate of return. Also when the benefits were initially granted, the expected value was presumably reflected in stock prices, so original investors received a once-and-for-all windfall gain. Original investors reaped these gains, but many present stockholders presumably receive on average only normal returns.[24] For that reason, withdrawal of such favors might be viewed as taking when nothing has been given.[25]

1. Possible regulatory roles of tax preferences

The possible roles of tax preferences as an alternative to regulation are very similar to those of direct subsidies in cash or in kind. One difference is that tax preferences are not so easily estimated, and may not be as capable of close review by Congress and the public. However, review is not impossible, as the Budget Act requires the President and congressional Budget Committees to publish "tax expenditures budgets." [26]

As with most direct subsidies, the nature of many tax concessions do not appear closely related to the major regulatory purposes discussed in this report. Table 5–2 indicates that tax expenditures or preferences directed to regulatory goals are generally very small relative to those aimed at redistributing income to particular groups (deductibility of mortgage interest and property taxes on owner-occupied housing), encouraging investment (investment tax credit and capital gains treatment of some income), or providing relief to small business (corporate surtax exemption).

TABLE 5–2. *Leading and potentially "regulatory" tax expenditures, 1977 (in millions of dollars, estimated)*

Leading tax expenditures	
Investment tax credit	9115
Deductibility of mortgage interest and property taxes on owner-occupied housing	8535
Exclusion of capital gains at death	6475
Exclusion of pension contributions and earnings: Employee plans	7280
Capital gains: individual	6225
Corporate surtax exemption	6185
Charitable contributions deduction	5260
Potentially "regulatory" tax expenditures	
Exclusion of employer contribution to health insurance and medical care	4225
Deductibility of medical expenses	2695
Expensing of intangible drilling, exploration and development costs	1035
Excess of percentage over cost depletion ("depletion allowance")	1595
Capital gains treatment of coal and iron ore royalties	70
Capital gains treatment of certain timber income	230
Pollution control: 5-year amortization	15
Deferral of tax on shipping companies	130
Railroad rolling stock: 5-year amortization	10

Source: "Tax Expenditures," op. cit., various pages.

[24] The same points apply to all forms of assistance (or hindrance)—including direct and indirect subsidy and taxation.

[25] This can lead to strong opposition to regulatory changes. See Gordon Tullock, "The Transitional Gains Trap," op. cit. and see Ch. 6 of this volume.

[26] Ibid., p. 5.

2. Tax preferences for mineral extraction and alternatives

Percentage tax depletion of minerals might be considered "regulatory", since it could lessen dependence on potentially insecure foreign supplies. However, to serve that purpose, the preference would logically be given only to producers of mineral for which import dependence and risk are high. And that is certainly not the case for coal and iron ore, and is probably not true for copper and a wide range of other minerals. Domestic resources of many critical minerals, the supplies of which are potentially insecure, are so sparse that there is essentially no production, and that situation would be unlikely to change even with very large subsidies.[27] In most cases, the alternatives of stockpiling appears preferable.[28] Moreover long-range effects of such subsidies can be perverse, because they encourage rapid and uneconomic depletion of domestic resources. To be sure, such subsidies are one alternative to direct government requirements that minerals be produced. Presently, Federal "diligence requirements" are intended to encourage production by lessees of many government-owned mineral properties, particularly coal. Penalties for not fulfilling the requirements are severe, ultimately involving lease revocation. Thus production is encouraged.

A related policy objective of the Federal mineral management program is curbing what is seen as "undue speculation" or "holding back" of production in anticipation of higher prices. For example, S. 9, the proposed "Outer Continental Shelf Lands Act Amendments of 1977," lists as one of its purposes "avoiding undue speculations." (Section 205(a)(6).) Speculation could be undue if mineral resource ownership were highly concentrated (or if firms were colluding), and the flexibility of alternate supplies were small enough that present producers and resource owners could drive up the price by contracting production or holding reserves out of production. Another regulatory rationale to encourage production would be to offset the inhibiting effect of per unit royalties, which may raise costs to producers far above the resource cost to society.

However there are other objectives which may conflict with the goal of increasing production.

The Department of the Interior has stated its major goals for management of Federal mineral resources as: [29]

1. to insure orderly and timely resource development;
2. to protect the environment; and
3. to insure the public a fair market value return on the disposition of its resources.

Obviously these goals may conflict, and a balancing of those various interests may be required. For example, "timely" development might be so rapid as to conflict with environmental protection or insuring the public a "fair market value return." As previously discussed, the "con-

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[27] See Charles River Associates, "Economic Considerations Underlying Supply Access Agreements: A General Analysis and Prospects in Ten Mineral Markets," U.S. Department of Labor, Bureau of International Labor Affairs, 1975.

[28] Ibid.

[29] U.S. Congress, Senate Committee on Interior and Insular Affairs, "Federal Leasing and Disposal Policies," Hearings, 92d Cong., 2d Sess., June 19, 1972 (Washington, U.S. Government Printing Office), pp. 38–39, cited in U.S. Cong., Senate Comm. on Interior and Insular Affairs. "Federal Leasing of Petroleum on the Outer Continental Shelf," Committee Print, (Washington, U.S. Government Printing Office), p. 3.

servation" problem is to discover, develop, and extract resources so they will be used when they are most valuable to society. Conducting leasing to "insure the public a fair market value return" may focus attention too much on assuring large Government revenues from bonuses and royalties, without sufficient attention toward encouraging efficient rates of production. The social value of resources comes from their production and use. And that value is achieved, when, viewed from the present, their consumption would be most useful to society.

However, holding resources off the market in expectation of higher prices is generally rational conservation. This may not apply if the markets are not competitive or if firms believe that withholding will cause relaxation of regulation.

Federal policy with respect to coal production on Federal lands produces an interesting example of the merits of tax preferences relative to other alternatives. Under present policy, as defined by the Federal Coal Leasing Amendments Act of 1945 [30] and regulations issued pursuant to it,[31] all coal lessees must produce at least 1 percent of their reserves within 10 years, and the balance must be extracted within 40 years. The administrative burden of enforcement of these regulations may be substantial.

A potentially more efficient alternative, considered and proposed by the Interior Department, was the payment by the companies of "advance royalties in lieu of continuous operation." [32] With such payments lessees would have an automatic incentive to commence production promptly, for they would incur royalty costs whether or not they produced. The incentive effect can be substantial. And incentives for reasonably rapid production would be provided without the necessity of direct regulation. Also, the policy goal is to assure prompt production to prevent "withholding" or for whatever reason, the royalty approach appears simpler and more directly effective than either depletion allowances or direct regulation.

3. The merits of selected "regulatory" tax preferences

The rapid amortization provisions for pollution control equipment and rolling stock acquisition were adopted following repeal of the Investment Tax Credit in 1969.[33] For pollution control equipment the stated rationale was to ease the financial burden of compliance with such regulatory requirements.[34] In the case of rolling stock acquisition, Congress intended to encourage railroad modernization, increase efficiency, reduce freight car shortages and aid financing of new equipment.[35] As Table 5–3 indicates, the amounts of tax expenditure or subsidy are small. Reinstatement of the investment tax credit has reduced the potential impact of these programs, as the credit is not available for property subject to rapid amortization. The pollution control provision applies only to equipment in service before 1976. Railroads without tax liability did not benefit directly but were still encouraged to increase rolling stock purchases by leasing equipment from financial institutions including banks and insurance and leasing companies.

[30] Pub. L. 94–377.
[31] 41 F.R. 56643.
[32] 40 FR 50070 (Dec. 31, 1975) ; 41 FR 21779 (May 28, 1976).
[33] "Tax Expenditures," opt. cit., p. 45.
[34] Ibid., p. 39.
[35] Ibid., pp. 45–46.

The marine shipping company tax deferral allows U.S. vessel operators to deposit earned income in a capital construction fund (CCF).[36] Deposits are tax deductible, taxes on earnings are deferred, and no taxes are paid if withdrawals are used to purchase or pay for American made or reconstructed vessels. By redepositing gains on vessel sales and income from operations, taxes can be deferred indefinitely. The purpose of the provisions was to stimulate U.S. shipbuilding; while the quantitative impact of the program is not known, it can be assumed that more shipbuilding to some extent has occurred as a result.

One problem with the accelerated amortization and investment tax credit methods is that they affect only actions involving tangible capital investments. In the case of railroad rolling stock the poor credit position of most roads may have made this appropriate. The measure directly affected a policy problem, namely freight car shortages. But in itself, the provision contained no incentives for increased efficiency. Rapid amortization of pollution control equipment may be particularly important for firms in poor credit positions, because of required investments in "unproductive" (i.e., not directly revenue-producing) capital. But the provision may have encouraged capital-intensive control measures at the expense of potentially cheaper and less capital-intensive methods. This was accentuated by restricting the provision to equipment designed specifically for pollution abatement and no other purpose. Thus, recycling facilities with pollution control capabilities may not have qualified for favorable tax treatment. Pollution sources with small profits and, hence, tax liabilities would have been less able to take advantage of the provision and, therefore received little incentive to reduce pollution. On the average, these would tend to be the smaller pollution sources which are both numerous and, per unit emission reduction obtained, relatively costly to monitor by administrative action. The tax credit provision, therefore, appears weakest just where the greatest strength was required.

A general tax on emissions (or subsidy to reduce pollution) could achieve the same result at less total cost to society. The principal advantage of the tax subsidy to equipment is its administrative feasibility: continuous monitoring of individual plants appears less essential (though equipment testing and certification is) and the program can be at least partially administered through the existing tax system. But if the equipment is ineffective the program will have no effect. Allowing accelerated amortization encourages the installation of more equipment but provides no incentive to currently operate and maintain it or to train workers or adjust prices or production processes.[37]

The income tax exemption for interest on State and local government bonds,[38] and the exemption of public enterprises from most taxes have influenced the relative rules of public and private enterprise, particularly in electric power. Municipal expansion has been encouraged, with a reduction in the scope of State regulation.

Federal tax preferences might encourage service to small communities or specific areas of the country in lieu of direct or indirect sub-

[36] Ibid., pp. 43–44.

[37] More basically, subsidies for abatement are generally less appropriate than taxes. While subsidies may encourage abatement they also can lower the cost of polluting activities below what it might otherwise have been with a tax or penalty and so potentially contribute to increased pollution.

[38] Estimated 1977 tax subsidy of $4.5 million; see Ibid., p. 515.

sidies and regulatory service requirements. Local and State governments presently use these devices to attract industry. Alternatives include lower tax rates on income earned in designated areas or some tax forgiveness to firms in proportion to their provision of such service. The major policy concern about those preferences, as well as nearly all subsidies, is whether they are properly Federal or local responsibilities. If local governments grant the tax preferences, localities will both reap the benefits and pay the costs. Federal tax preferences place no burden on the locality and may encourage communities to demand larger amounts of uneconomic service.

4. Energy-related tax preference proposals

Tax credits and incentives are more significant regulatory tools with the enactment of various provisions of the Carter Administration's National Energy Act and related legislation. The regulatory purposes of the legislation can be seen as the internalization of a variety of "external effects" of reliance on imported oil—including undue exposure to risk of future embargoes and price increases, and resulting constraints on foreign policy. Other major rationales advanced include concern over resource depletion and the environmental effects of fuel production and use.[39] More generally, energy-related tax proposals are both numerous and wide-ranging. This section discusses selected proposals which would rely on tax preferences of various sorts. Some of the proposals would result in very substantial tax subsidies or expenditures.

Portions of the National Energy Act as enacted by Congress provide for tax credits for a variety of residential energy conservation investments. A non-refundable credit—up to $300—is provided for 15 percent of the first $2,000 spent on equipment installed in principal residences. The credits cover investments in insulation, weatherstripping, clock thermostats and other items.[40] The credit would be nonrefundable, not being allowed to exceed tax liabilities, and would be granted only for improvements to the owner's principal residence, without application to renters or condominium owners. These restrictions necessarily reduce the total potential effect on energy conservation activities. The nonrefundability provision adversely affects potential benefits to, and conservation activities by, lower income owners. Conversely the principal residence restriction diminishes potential benefits to higher income owners.[41] A tax subsidy favoring low income owners can be justified not only on equity grounds but by the relatively infrequent use of insulation and other conservation devices by such groups. For example, in 1975, of families in single homes 88.7 percent of those with

[39] See Department of Energy Office of Public Affairs, "The National Energy Act," November 1978. Hereinafter cited as "National Energy Act." The Carter Administration's energy tax proposals as initially proposed, are contained in H.R. 6831, 95th Congress, the proposed "Energy Tax Act of 1977." See also H.R. 5263, 95th Congress, the proposed "Energy Production and Conservation on Tax Incentive Act." For discussion of the reasons for the energy program in general and the tax proposals, in particular, see e.g., U.S. House of Representatives, Committee on Ways and Means, "Energy Program Section-by-Section Description of H.R. 6831—The Administration's Tax Proposals Relating to Energy," Committee Print, May 13, 1977, p. 3, and particularly U.S. House of Representatives, Committee on Ways and Means. *Energy Program–6: Economic and Budget Considerations,* Committee Print, June 3, 1977, pages 3–6 [hereinafter note as *Energy Program–6*].

[40] National Energy Act, *op. cit.*

[41] See "Energy Program-6", opt. cit., pp. 77–19 for a discussion of these and other other restrictions in the original proposals.

incomes of $25,000 to $35.000 had attic insulation and 62.7 percent had storm windows.[42] In contrast, only half of the families with incomes under $2,000 had attic insulation and just over a third had storm windows. The percentages of families having or adding such devices generally rose with income level.[43]

In addition, insulation/construction proposals could involve very substantial tax subsidies. The effect of these provisions on the use of conservation devices depends on the responsiveness of consumer demand to price, *and* on the effect of the proposals on prices and availability of the relevant equipment and materials. Such a credit should very significantly increase the demand for the relevant products and services. Anticipation of its passage and application retroactive to April 20, 1977, appears to have greatly boosted demand, particularly for fiberglass insulation.[44] Since much of the increased demand will be essentially a one-time affair for retrofitting, addition of substantial new capacity may not be justified. Any additions of capacity may take considerable time, thereby reducing the period over which homeowners may use the credit. Rapid demand growth will probably cause price increases which will further reduce the effect of the credit on conservation and energy consumption.[45] The fiberglass insulation industry now consists of only three firms, and either individually or jointly they may consequently have significant market power.[46] By decreasing the proportion of the price paid by consumers, the tax credit would provide an incentive for producers to raise prices.[47] That potential situation clearly warrants antitrust monitoring though it is not clear what antitrust could accomplish. The problem is delicate, for the price increases that may result from this and other programs can play a vital role in allocating scarce supplies among competing users, and imposing price controls could impede capacity expansion.

Since at present high energy prices consumer would gain substantially from energy conservation even without a credit,[48] is the subsidy from taxpayers necessary? Consumers are apparently quite aware of the benefits of insulation; in 1975, 22 percent of all homes added some form of insulation. For a more extensive credit, proposed as part of H.R. 6831, the CBO estimated that of the 23.8 million households forecast as adding insulation over the credit period, 7.8 million or almost one-third would be induced to do so by the credit, while the remainder would make the improvements in any event. And even that may overstate the effect of the credit. In its absence, insulation (and other conservation devices) would probably be less expensive for significant periods of time, clearly lessening the effect of the credit. What might justify such a subsidy when private benefits appear substantially to exceed costs? Presumably some type of external effects would be involved. It is not clear whether these effects justify a tax subsidy of the amount proposed.

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[42] Ibid., p. 10.
[43] Ibid., pp. 10–11.
[44] Ibid., p. 15.
[45] Ibid.
[46] Ibid., p. 15.
[47] Ibid. The situation is similar to that of insurance in general, and hospital insurance in particular. Insured consumers paying only a small share of the price, will presumably be less sensitive to costs.
[48] Ibid., p. 15–17.

Accepting the merits of proposals designed to increase residential energy conservation, are tax credits the best method for accomplishing that purpose? One alternative would be to require through "standard" setting certain energy conservation measures or energy efficiency performance. Such standards are now mandated for new structures by the Energy Policy and Conservation Act. Yet that approach has serious drawbacks. Defining and enforcing such standards is difficult in any case, but very complex for existing structures. It would be most difficult to know what measures were even feasible, much less cost-effective, for existing structures. How the standards on new structures will affect the variety and cost of future construction remains to be seen. On balance, the tax credit approach appears clearly preferable for existing structures, and may also be a desirable supplement or alternative for the new. Like all incentive mechanisms, credits require some degree of monitoring to prevent fraud and deception. But action is automatic, and individuals are free to weigh the costs and benefits of taking various actions. Also the tax credit mechanism does use an established agency and method for reporting.

Taxation is another alternative for addressing energy-consumption related problems. The insulation-residential conservation program yields the desired energy savings only to the extent that resources are expended on conservation devices such as insulation. Encouragement of potentially cheaper methods such as turning down thermostats and wearing sweaters is of course unaffected by tax credits. Since some potentially economical methods of conservation are not encouraged, both the total cost for the level of fuel-saving achieved and the fuel saving achieved per dollar of tax subsidy may be lower than with a more general incentive, such as a per BTU tax on energy use. If such a tax were general and uniform it would yield energy savings at the lowest cost.[49] Differentially higher taxes on oil and gas could have the desired effect of contributing more substantially to reduce import dependence, albeit at higher total resource cost than a uniform tax per BTU.

Taxes and credits would have quite different distributional effects. Credits redistribute income from taxpayers, in general, to those who qualify for the advantage. In this regard, the favored class will tend to be those facing relatively high energy costs. Since the total benefit from insulating one's home rises with fuel use, credits may tend differentially to benefit heavy energy users. This result may be equitable as these individuals presumably lost more from the original energy price escalations following the 1973 Arab oil embargo. On the other hand, energy taxes would redistribute income from heavy energy users to others.

C. Indirect or "Invisible" Subsidies

This section discusses subsidies which are indirectly given and thus may be "invisible," in the sense that they do not appear in either an expenditure or "tax expenditure" budget. Such subsidies may be given in kind, as were land grants to railroads and some universities, or in-

[49] This abstracts from, e.g., the differing environmental consequences of producing and using various energy sources.

directly in cash through legally mandated increased demand, as exclusive rights to coastal shipping are granted to the U.S. maritime industry by so-called cabotage laws.[50] Other apparent indirect subsidies come from profits conferred by entry restrictions, which can be viewed as funds for potential cross subsidy. One example is the above-competitive prices paid at one time for airmail shipments.

A key feature of indirect subsidies is their quality of "invisibility." Indirectness itself is difficult to define, as subsidies are always granted to some firms or individuals and are therefore "direct" at some level. For example, should above-market-price purchases of materials for Government stockpiling be considered a direct or indirect subsidy?[51] The payment is, of course, direct. But the amount of subsidy—that is, excess of revenue over normal market revenue—may be difficult to observe and need not explicitly appear in a budget statement. In one sense, any subsidy granted to a group other than that which public policy intended to benefit is indirect.

Indirect subsidies are widespread in transportation. Water carriers use Government improved and financed rights-of-way and pay no tolls for their use. Motor carriers utilize Government provided highway systems, and user charges imposed by license fees and fuel taxes may not fully cover costs imposed on the system, especially by heavy trucks.[52] The costs of those uses, as well as grants of resources, are generally not reflected in budgets. Therefore, benefits and costs of such subsidies are exceedingly difficult to estimate. But some of the qualitative effects and general orders of magnitude are clear. Consider the cross-subsidization case. Without requirements to provide nonremunerative service, entry restrictions subsidize the (original) owners of the protected firms. With required cross subsidization, users of the otherwise nonremunerative services gain at the expense of other users. The net costs of the cross subsidy necessarily include the additional costs of those users forced by high prices to use more costly modes of service.

Air traffic control is an example of "invisible", indirect subsidies. While safety considerations justify a centralized—and, even perhaps, government-owned—traffic control system at major airports, landing fees and jet fuel taxes do not cover Federal and local costs of the system. Also the fees do not reflect the real costs (especially in terms of risk and congestion) imposed on the system, because charges do not vary over time and with traffic conditions. As a result, general aviation receives a substantial subsidy in terms of relatively inexpensive (or free) use of highly scarce peak-period landing and runway rights. This subsidy appears in no budget but is nevertheless a real cost of operation of the general aviation system. It is "paid" for by users of commercial flights, who incur longer delays in holding patterns, and by all airport users who are exposed to greater risk of accidents. The latter cost is impossible to evaluate, though the cost of a single airline accident can be truly enormous. The former cost will depend on the value which passengers place on their time and on the cost of the

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[50] *Cabotage's* original meaning is "navigation along the coast." The relevant law, section 27 of the Merchant Marine Act of 1927, is commonly known as the Jones Act.

[51] Such payments were in fact made for a number of stockpiled commodities. See, e.g., National Commission on Supplies and Shortages, *Government and the Nation's Resources.*

[52] See also James R. Nelson, "Regulation of Overland Movements of Freight," in Appendix to this volume.

aircraft rendered unproductive during delays. As discussed below, these costs and hence the indirect or implicit subsidy to general aviation, may be very high indeed—up to $1,000 per general aviation flight during busy hours at Chicago's O'Hare airport. It is most unlikely that the arrival time and place of many such flights are critical enough to justify incurring such costs. But the indirect nature of this subsidy renders it generally invisible; and granting the use of a scarce resource, such as O'Hare Field, at a charge bearing no relation to its value is a certain inducement for such inappropriate use. The early stages of railroad development was greatly facilitated by government and land grants, which constituted a substantial indirect subsidy, perhaps justified to encourage economic development. Many indirect transport subsidies originated in the government's initial role in developing rights of way. For example, the original airway system was intended to facilitate a national interest in mail delivery.

A common purpose of regulation is to assure some types of unprofitable service, a characteristic that is claimed for air, rail and less-than-truckload truck service to small communities. The low "life line" rates for small electric and telephone customers, that some state commissions require of utilities, fall in the same category. Such rates are to be "subsidized" out of supposed "profits" on other sales. For years the railroads were required to retain unprofitable passenger business, though this has now been transferred to Amtrak.

Of course, such service can be supported by direct government subsidies. Such subsidies are used for local service airlines and for unprofitable rail branch lines. But in most cases regulatory agencies do not have the power to pay subsidies, and ordinarily must rely on "cross-subsidization" on the part of the regulated firm. A recent study found little or no evidence of such cross subsidy in trucking. Surveyed motor carriers found their service to small communities to be as desirable to them as service provided to other areas.[53]

1. Indirect subsidies by reserving markets

Indirect subsidies may also be provided by reserving markets to certain groups and thus restraining competition. The protection afforded the U.S. maritime industry by cargo-preference [54] and cabotage laws illustrate such effects.

The cargo preference laws reserve all military cargo and half of Government shipments to the American-flag fleet.[55] Such "preference" cargoes account for more than half of the total cargo carried by American-flag ships; [56] much of which is shipped by a few firms [57] over a few routes, so the benefits of the policy are not general, but concentrated heavily on the lines serving those routes.[58] Under present law,

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[53] The Impact On Small Communities of Motor Carriage Regulatory Revision, op. cit., p. 89.

[54] The main cargo preference laws are the "Cargo Preference Act" (68 Stat. 832); the "Military Transportation Act" of 1904, 10 USC 2631, 1970; and Pub. Res. 171, Ch. 90, 48 Stat. 500 (1934), 15 USC 616a (1970).

[55] U.S. Department of Justice, "The Regulated Ocean Shipping Industry," op. cit., Appendix D, p. 4.

[56] Data are for 1974 and are taken from Gerald R. Jantscher, "Bread Upon the Waters: Federal Aids to the Martime Industry," Washington, D.C., Brookings, 1975, pages 70–71 (Tables 7–1 and 7–2) cited in U.S. Department of Justice, ibid.

[57] These include the Military Sealift Command, the Department of Agriculture, and the Agency for International Development, the U.S. Department of Justice, ibid.

[58] Ibid., Appendix D, p. 5.

direct subsidies are reduced to those lines carrying preference cargo.[59] The costs of preference cargo subsidies are difficult to quantify. Yet it is clear that the indirect subsidy is large. Typical estimates indicate that preference cargo cost double what it otherwise would be in the absence of restriction.[60] One study found that during the 1960's charter rates for U.S.-flag vessels were twice that of foreign ships.[61] Jantscher in his review estimated that between 1952 and 1972 the indirect subsidy paid by the Military Sealift Command and its predecessors was $3.8 billion.[62] These subsidies are indirect, because they are a component in higher than necessary rates, and as such, do not appear in the budget as subsidies. These extra payments significantly contribute to high cost and inefficient U.S. shipping.[63]

The cabotage laws or "coasting laws," another form of maritime support, reserve commerce along and between Atlantic and Pacific coasts, to domestically built U.S.-flag ships. The laws also reserve to such ships trade between the mainland and noncontiguous U.S. States, territories, and possessions. Unlike cargo preference, cabotage laws apply to shipping by the public and private sectors.[64] By setting aside part of the shipping market for U.S.-built and registered vessels, the requirements surely increase the demand for such vessels above what it otherwise would be. The costs of this shipping are substantially higher than that of the foreign fleet, so the restriction involves a substantial indirect subsidy. Part of the subsidy cost is indirectly borne by shippers and their customers who shift cargo at the extra expense of shipping by pipeline to other modes in order to avoid sea or rail in preference to using the unnecessarily high expense of using U.S. shipping.[65] Ultimately consumers also share the costs. The magnitude of these costs is not capable of measurement, but surely is substantial.[66] As a result there is less use of coastal ocean shipping and more use of other transport modes than might be desirable.

Clearly a major objective of cargo preference and cabotage laws is to preserve the economic well-being of the American merchant shipping industries, and their workers. It appears that goal has been at least to some extent achieved. It is equally clear that the inherent costs have been very high. Still another justification for this protection is to secure national defense. In that regard, it is very questionable that this is the most efficient means toward that end. There is no reason to believe that the existing size of the fleet, which is fostered by cargo preference and cabotage laws, is properly related to national defense needs.

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[59] 40 CFR Port 280 (1975), cited with affirming court cases in ibid.

[60] Ibid., Appendix p. 6.

[61] Memorandum to William S. Gaud, Administrator, AID, from Soya Menschikoff, page 20 and note 16, May 26, 1976 ("Special Ocean Freight Staff Recommendations on Ocean Freight Rate Matters"), cited in ibid.

[62] Jantscher, *Bread Upon the Waters, op. cit.*, p. 88, cited in ibid.

[63] Two other subsidies—the Operating Differential Subsidy (ODS) and the Construction Differential Subsidy (CDS), also exist. Note that in addition to these direct subsidies the Maritime Administration operates the Merchant Marine Academy and aids state-run academies which train officers and marine engineers. This subsidy is analagous too, but more "direct" than that received by the airlines whose pilots generally were trained at taxpayer expense during their military service. On the value of subsidized pilot training see H. Gregg Lewis' *Unionism and Relative Wages in the United States,* (Chicago; University of Chicago Press, 1963).

[64] Gerald R. Jantscher, "Federal Aids to the Maritime Industries," in The Economics of Federal Subsidy Programs, op. cit., pages 779–780.

[65] Gerald Jantscher, ibid., p. 781.

[66] Ibid., pp. 781–782.

2. The general merits of indirect subsidies

In summary, indirect or invisible subsidies appear difficult to justify on economic or general policy grounds. Their costs are hidden and their incidence more uncertain than is the case for direct subsidies.

Thus the public generally does not perceive these subsidies for what is fact they are: Government supports for private enterprise, the costs of which ultimately fall on consumers. Some indirect or invisible subsidies are reflected somewhat in budgets, but are not identified as such. On the other hand, cross subsidization does not appear at all in the budget, and so is subject to even less congressional and public scrutiny. Thus, because it is not known how much is thereby received and by whom, it is virtually impossible to determine if the benefits outweigh the cost, or whether social goals are achieved. Moreover, due to this invisibility, such goals may not even have been articulated.

D. Regulatory Options When Decisionmakers do not Bear Full Costs or Where Information is Imperfect; Principles and Policy Considerations

A common concern underlies the activities of Federal regulatory agencies concerned with health, safety and consumer protection: Private market transactions may yield socially inappropriate results because firms and individuals do not appropriately take account of the public consequences of their actions. Of course, it is no simple task to define what constitutes such "appropriate" consideration. Yet when decisionmaking ignores or "underemphasizes" consequences, even though the benefits of taking them into account would outweigh the costs, an "externality problem" may exist and may be worthy of Government action. Since lack of knowledge could cause even the most conscientious to ignore some consequences, information and other "externality problems" can be considered as very much related problems.

External effects may be significant and justify intervention in areas other than health, safety and environment. For example, a major justification for many energy taxation proposals is that firms and consumers do not sufficiently take account of the potential impacts of future oil import crises, by reducing their consumption of oil and oil substitutes, and by investing in various forms of protection such as stockpiles. Present high energy prices, coupled with widespread expectations about future prices, has motivated firms and consumers to take some action, and it appears that market incentives are moving the private sector in the right direction.[67] But it is implausible to believe that a consumer will fully take account of the foreign policy effects of oil import dependence in deciding where to set the thermostat or whether to purchase proper home insulation. While business firms have profit incentives to protect against future crises by avoiding use of risky fuels, they too are likely to ignore or underweigh such political factors. Thus, important considerations may remain "external" to the marketplace, and thus may be appropriate for Government action. Further, private actions to reduce import dependence might weaken

[67] See, e.g., "The U.S. Has a National Energy Policy, and It's Working," *Washington Post*, March 19, 1978, page E1, noting private actions to conserve fuel convert from oil to coal, and discover new energy resources.

OPEC or reduce its price for oil. Any one firm would reap only a very small proportion of the benefits from such action, and so the major part of the benefit from "deterring" or moderating OPEC actions may be ignored by the marketplace.[68] One interpretation of much of Carter Administration and other energy proposals is an attempt to internalize this type of externality.[69]

1. Direct and indirect subsidies can lead decisionmakers to undervalue costs

Externalities may also be caused by policies set by government or other institutions. For example, health care is not only largely covered by insurance but heavily subsidized, so a large portion of that expense is external to those using such care. These costs are borne by taxpayers and, to the extent that inefficiency results, by those who pay the medical insurance.[70] As a result there may be overuse of medical care and escalation of health cost. In addition, increased health-care use by one group will directly impose costs—such as higher taxes—on other groups. The most direct solution would be to eliminate the various subsidies. But doing so could be contrary to other important social purposes, such as public assistance to the poor and needy. Other solutions include stronger incentives for cost and utilization control, and a wide range of more or less detailed regulation.

This type of "financial externality," [71] is quite common and may be used as an argument for regulation in a variety of situations. For example, with subsidized medical care, part of the cost of all accidents and injuries is borne by taxpayers. This could justify more vigorous occupational safety and health regulation. So too, automobile accidents necessarily impose costs on others not directly involved, such as publicly financed police services that are required.[72] Financial externality could, in part, justify regulatory measures concerning automotive safety equipment [73] and better highway design, as well as educational programs like driver training. Although present in many situations, financial or other externalities are not always an adequate justification for Federal regulatory controls. As discussed below, intervention may be more appropriate only where consequences are potentially severe and irreversible, or where private incentives would not lead to satisfactory solutions.[74]

2. Differing types of spillovers (externalities) mandate differing policies

So too, differing types of externalities can call for different solutions. In some situations results may be inappropriate because one or

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[68] For discussion of reasons why the private sector may not behave appropriately in such circumstances, see, Charles River Associates, "A Framework for Analyzing Commodity Supply Restrictions," National Bureau of Standards—Experimental Technology Incentives Programs, 1976, pages 93–100, and Charles River Associates, "Private and Public Stockpiling for Future Shortages," National Commission on Supplies and Shortages, op. cit.

[69] The proposals have other goals including conservation and environmental protection. The merit of the conservation argument presumably rests on some type of externality or other market failure. The goals of the Carter Administration's energy proposals are discussed in, e.g., "Detailed Fact Sheet: The President's Energy Program," Office of the White House Press Secretary, April 20, 1977, pages 1–2, and Energy Program—3, op. cit. pp. 3, 4.

[70] Some costs may be borne by some health-care providers.

[71] See Zeckhauser and Nichols, op. cit. in appendix to this volume.

[72] See Hinich and Staelin, op. cit. in appendix to this volume.

[73] The National Safety Council estimated the annual cost of accidents at $9 billion. Ibid.

[74] Since the direct benefits and external costs of most actions will accrue to different groups, determining appropriate policy will involve difficult judgments.

more of the parties to a transaction is not fully informed about potential costs or benefits and so cannot act appropriately. That problem, of course, can be remedied by providing proper information. However, information that is highly technical in nature, may not be of much use to consumer decisionmaking. In that case, more direct regulation may be desired by consumers even though choice is restricted as a result.[75] In other cases some of the benefits or costs of transactions may fall on third parties, as in air or water pollution.[76] In these cases, some form of intervention may be needed to induce or compel those directly involved in decisionmaking to take appropriate account of all of the consequences (i.e., costs and benefits, conceived generally) of their actions.

Poor information and third-party effects may call for Government intervention to assist citizens. But, flaws in consumer decisionmaking also may create problems. For example, occupational safety and health regulation might be justified because workers persistently underestimate the likelihood or potential consequences of hazards, reasoning that "it can't happen to me."[77] Or policymakers may have reason to believe that low income or restricted opportunity might compel some individuals to make unsafe product, occupational or locational choices such as living in a highly polluted, unhealthy area which increases medical costs. Strict regulation might be rationalized as a method to "equalize opportunity" or partially compensate for the disadvantages of low income or mobility. However, regulation by whatever approach, be it standards or incentives, is not the only possibility. Conceivably the individuals involved, given the choice, would prefer the lower cost and higher risk inherent in a less safe product or more polluted environment. It is also possible that affected individuals might prefer to save the costs of regulatory action rather than receive a benefit of safer products or a cleaner environment.

E. Market Effects on Safety, Health, and Other Externality Problems—The Crucial Role of Information

Market transactions always occur in a legal framework defining rights and obligations. That would be true in most cases, with or without Government regulation. Thus wholly "unfettered" market operation does not mean economic anarchy. Its likelihood is improbable: public expectations of Government as a protector, and the regulatory controls that result, indicate that citizens are not desirous of a pure market system.[78] Yet even absent explicit Government intervention via regulation, taxation, or other means, firms and individuals could not act with complete freedom. Under common law, parties to transactions are liable for avoidable adverse consequences borne by others. Also collective bargaining would presumably have a role, as well as

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[75] See Roger Noll, Nina Cornell, and Barry Weingast, "Safety Regulation," in *Setting National Priorities*, Washington, D.C.: Brookings, (1977).

[76] Imperfect information and high costs of bargaining contribute to the situation. For example, if third parties damaged by air pollution could identify the source of injury, they could pay or otherwise induce the polluter to cease the adverse activity, or sue under liability law. Alternatively, the polluter could compensate those damaged. Either method would provide incentives to take the external consequences into account. But such solutions, which may be plausible for some types of occupational safety problems, are inappropriate for many health and pollution matters.

[77] There is some evidence that individuals may behave in this manner and, find themselves systematically and unpleasantly surprised. See Zeckhauser and Nichols, op. cit.

[78] Noll, Cornell, and Weingast, op. cit.

standard setting, information gathering and other activities of labor and industry groups. As limited by that context, the "unfettered" market is examined here, not because it is a real alternative, but because isolating the causes of its failings helps evaluate policy alternatives.

1. *Market evaluation of the costs of hazards*

In a system governed by *caveat emptor*, consumers and workers would initially bear product and employment risks. Provided that suitable and accurate hazard information were available, consumer and worker decisions would drive down the prices of hazardous products and raise wages for hazardous occupations. These differentials might cover the perceived costs of the risks, i.e., they would equal the perceived value to individuals of the expected damages. Production of hazardous products would decline as would the use of dangerous processes. Producers would increase profits by preventing hazards up to the point where the cost of extra hazard reduction just equalled the damages prevented. That is, with proper information, hazard costs would be efficiently considered and accounted for in producer and consumer decisions.[79]

There is today substantial evidence that the labor market does take some account of relative risks. For example, injury-rate differences across manufacturing industries appear to be related to, and partially explainable by, factors which measure the likelihood of accidents—such as employee turnover, and the cost to employers of accidents, as measured by risk-related wage differences.[80] And the existence of risk-related wage premiums is reasonably well documented, at least for occupational injuries. One study found that, in manufacturing industries where the yearly death rate is 16 per 100,000 workers, employees received on the average about 1.5 percent higher wages than comparable employees in industries with death rates of 8 per 100,000.[81] This seemingly indicates that a worker earning $8,000 per year would be willing to forego $120 to reduce the chance of death from 0.0016 to 0.00008. This risk reduction implies an expected reduction in deaths of 1 among a group of 12,500 workers.[82] Assuming that each worker is willing to pay $120 for this risk reduction, the 12,500 workers together appear willing to pay about $1.5 million [83] to avoid one "expected" death.[84] This value is not out of line with some estimates of OSHA-imposed compliance costs per expected life saved.

That such differentials exist should not be surprising. But are they adequate to induce prevention and compensate workers for hazards? It is clear that higher wages in riskier occupations will only reflect typical worker estimations of hazard, prior to the occurrence of any injury. If in fact injury or disease occur, much greater compensation

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[79] For a lucid explanation of this theory see Robert Stewart Smith, "The Occupational Safety and Health Administration: Its Goals and Achievements," (Washington, D.C.: American Enterprise Institute), pages 19–26.

[80] Ibid, pp. 93–95.

[81] Ibid., p. 30.

[82] (12,500=1/.00008).

[83] $1.5 million=(120) x (12,500).

[84] This figure, or any other figure, cannot be taken to measure the "value of a life". Rather it indicates the total amount which a group might be willing to pay to reduce expected deaths by one. An individual faced with death would presumably be willing to pay substantially more than $120 to live.

will be required for the actual losses incurred. Compensation is thus a separate issue from incentives for prevention.

2. *Effects of imperfect information on market operation*

Good information is essential for markets to take account of such risks. Since the causal links between occupation and disease are neither well-known nor well-understood, and since many diseases take years to develop, the case for Government intervention appears particularly strong for certain occupational health hazards. It also may take time to acquire information, whether by experience or study. Learning by experience may require exposure to unknown hazards. Thus, information problems and subsequent flaws in market functioning, will be greatest for subtle and complex hazards, or for hazards from infrequently purchased products. For example, by the time a worker's occupation causes partial deafness, the damage has been done; lacking information, the worker had no opportunity to demand increased compensation, thus providing proper incentives to employers to take preventive action. Yet even without such employee pressure, employers may take some action to reduce recognized hazards in order to avoid high costs of absenteeism and turnover from injury or illness. Direct costs to employers of injury or illness include costs of recruiting and training replacements, damage to capital goods, lost profits from interrupted production, continued payments to those unable to work, and possibly increased workmen's compensation premiums.[85]

Workmen's compensation costs were $4.9 billion in 1970, or 1.13 percent of covered wages.[86] These substantial costs alone undoubtedly induce employers to provide some degree of safety. The direct costs to workers are also clear. But the costs of some health hazards may be so subtle, or the symptoms so long in developing, that workers may not identify their existence and cause. For instance, high workplace noise, pollution, and other adverse conditions may increase the rate of absenteeism, and lower productivity. These "hazards" may not be clearly considered or identified, and so may not be properly taken into account an employee career and job choices.[87]

Also, if employers and employees together [88] do not expect to bear the full costs of workplace safety and health hazards, prevention may

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[85] Nicholas A. Ashford. *Crisis in the Workplace; Occupational Disease and Injury,* (Cambridge, Mass.: MIT Press, 1976), page 347.

[86] Ibid.

[87] Some research indicates that compensation is sensitive to working conditions, increasing with the unpleasantness of the working environment and the rigidity of work discipline. See R. E. B. Lucas, "Hedonic Wage Equations and Psychic Wages in the Returns to Schooling," American Economic Review, v. 67, No. 4, Sept. 1977, pp. 549–558; and Robert Stuart Smith "Compensating Wage Differentials and Public Policy: A Review," Industrial and Labor Relations Review, forthcoming. As with other "compensating" differentials, a major question is not of existence but of adequacy as incentive. Another question for equity and social policy is their adequacy as compensation. See N. Ashford, *Crisis in the Workplace,* op. cit., pages 359–362 ,and Zechhauser and Nichols, *op. cit*

[88] N. Ashford (op. cit.) appears to indicate that for efficiency employers must bear the full costs of hazards, though at other points he appears to state opposing views. The correct view is that for efficiency, costs should in the first instance fall on the party who can avoid or reduce expected damage at lowest cost. This indicates that the least cost result would involve some sharing of cost and risk between employers and employees. It may well be that sufficient worker incentives would be provided by pain, income loss, etc. even in situations where employers had full responsibility for prevention and strict liability for worker losses. Since employers presumably would retain some control over hiring, compensation, and the scale of operations, some costs would inevitably be borne by workers. Similar analysis applies to product health and safety hazards.

be inappropriately low,[89] and the full costs of occupational hazards may not be taken into account. There are several explanations for this result. First, awareness of the costs may be limited, in large part because of lack of knowledge of causal links between occupation and health status.[90] Latency periods are often long and some toxins in workplaces interact with other hazards such as cigarette smoke, and relate in ways that are difficult to identify. In such circumstances workers may be susceptible to misinformation. For example, asbestos workers were told that only smokers were at risk, though company doctors knew that all faced risks, with smokers assuming the greatest danger.[91] Noise is a general stressor and may impose costs which do not appear to be noise-related. These effects may include increased heart disease, and reduced visual acuity, and hence potentially higher accident-related costs and lower product quality.[92] Such effects are difficult to identify, and may not be well reflected in employer and employee decisions.[93]

Some "indirect" effects are likely to be at least partially internalized by the market. And the absence of private efforts to abate a hazard may indicate that the private costs of the hazard are largely internalized, that the costs are small relative to the costs of abatement, or simply that the hazard is not understood.

Due to the uncertain nature of some indirect costs, studies which only consider apparent or well-established effects very often may not correctly evaluate the benefits of hazard reduction.[94] For example, evaluating the benefits of an OSHA noise standard only in terms of reduced hearing losses may overlook a wide variety of other, less apparent consequences.

Estimates of benefits may also involve bias, the direction of which may not always be clear.[95] For example, Professor Robert S. Smith used estimates of decreased residential property values from increased noise to estimate the benefits to workers of reduced workplace noise.[96] Smith notes four reasons why per-decibel reductions in prop-

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[89] Not all forces bias the outcome toward insufficient prevention.

[90] Similarly, consumers may be unaware of product hazards as in the case of thalidomide and some automobile defects which today sometimes result in recalls.

[91] Paul Brodeur, "Expendable Americans" (New York: The Viking Press, 1974, p. 80), cited in R. S. Smith, op. cit., p. 31.

[92] See N. A. Ashford, "Crisis in the Workplace," *op. cit.*, page 349. Ashford cites no evidence to support the linkage between noise and ". . . the cost of accidents and shoddy workmanship . . ." (N. A. Ashford, op. cit., pages 349). NIOSH considered the argument plausible, but cited no evidence. (NIOSH, "Occupational Exposure to Noise," p. IV–13, cited in R. S. Smith, op. cit., page 52). The only published study shows a correlation between noise and accidents but does not control for other potentially dangerous factors which probably are correlated with noise. (Willard A. Kerr, "Accident Proneness of Factory Departments," Journal of Applied Psychology, 1950, pages 167–170). In a more sophisticated study Smith (*op. cit.*, page 52) found ". . . no evidence that noise itself contributes to injuries." It is still possible that noise increases the severity of injuries, though no evidence for this has been offered.

[93] Of course, collective bargaining may help internalize such effects.

[94] See R. S. Smith, op. cit., pp. 39–58.

[95] Ashford appears to argue that hazard costs are generally underestimated. See N. C. Ashford, op. cit., pp. 310–378.

[96] Benefits from reduced hearing loss were indirectly estimated. R. S. Smith, op. cit., pages 46–56. As Smith notes, these estimates are in fact guesses. But he noted that to justify the proposed OSHA standard workers would have to be willing to pay at least $14,000 to $15,000 to avoid slight hearing losses. But many workers do not seek workmen's compensation for hearing loss. This may reflect ignorance of the "true" consequences of hearing impairment. Or it may reflect ignorance of the fact of hearing loss. Typical workmen's compensation awards for hearing loss are in the $2,000 or $3,000 range. ("Noise—Sound Without Value," *Safety Standards*, January–February 1969, pages 3–7 and State of New York, Workmen's Compensation Board, *Compensated Cases Closed*, 1971, Research and Statistics Bulletin No. 27 (July 1974), p. 70, cited in R. S. Smith, op. cit. page 56.) Smith notes that for cases such as these, which are probably more severe than the average (because workers sought compensation), "the political process appears to put the typical value of hearing impairment at less than $3,000." Ibid.

erty values may overstate the willingness of workers to pay for reductions in factory noise. First there is evidence that people are more averse to noise at home than at work.[97] Second, homes are used by more than one person and for more hours per year than are spent at work. Third, some of the apparent noise-related decline in property values may reflect not noise effects but nuisance—as when people annoyed by aircraft overflights are bothered by interference with television reception or fear of crashes.[98] Fourth, market incentives may be too low because some of the costs fall on neither workers nor employers. This can occur because of tax and other subsidies to medical care, or the lack of sufficient experience or other hazard-related rating of workmen's compensation. Injured or unhealthy workers and their families may become public charges, generating further financial externalities. Some of the costs of accidents or hazards may fall on firms but not be easily identifiable as hazard-related. Such costs include lowered productivity because of decreased worker morale, lower efficiency of new employees, and so forth.[99] Some market failure in this regard seems to result from lack of information, which might be remedied either by government providing information on accident costs, or by provision of hazard information so that workers and others could more readily demand differential compensation. Any increase in incentives to obtain such information would itself be an incentive to learn more about prevention.

It is true that not all workers (or consumers of products) need be fully informed to cause firms properly to internalize hazard costs. Rather, if enough persons with sufficient mobility are informed, firms will have substantial incentives to take account of the costs.[1] However, very often the most mobile are also the most likely to be the recently hired and thus less knowledgeable about risks. As one possibility, these workers may ignore hazards, and demand less in the way of protection and compensation differentials for hazard exposure. The younger, mobile worker may be less averse to risk than older and less mobile workers with families and community ties. On the other hand, since these newer and less experienced workers are more likely to be injured, there may also be a tendency to overestimate risks, perhaps resulting in more safety measures than are necessary or appropriate.[2] Offsetting this, employers in many industries have a much greater investment in experienced rather than in new workers. The cost of injury to an experienced worker often is high, as a replacement must be trained. Thus, employers may have incentives to provide less protection to the newer, more mobile workers, although they may face the geratest risk and hence have the greatest "need" of protection. Therefore, it is important that information on hazards be provided to those who are most capable of exercising pressure for preventative action.

3. Free market provision of safety and health: Problems of equity

A free market will provide some information. Workers and consumers could review research and test reports, communicate with

[97] Ibid., pp. 48–49.
[98] Ibid., p. 49.
[99] N. A. Ashford cites a long list of "indirect" or hidden costs, (op. cit., pages 348–350). But it is not clear that all of these are so hidden. Employers have clear incentives to be aware of the costs of training new employees, and of damage to capital equipment due to accidents. Their insurance companies surely make them aware of the later costs.
[1] See Hinich and Staelin, and Zeckhauser and Nichols, both in appendix to this volume.
[2] R. S. Smith, op. cit., p. 31.

others, or read product labels. All the same, in that setting, firms may have little incentive to publicize hazards. Costs inherent in providing information cannot easily be charged to all who benefit, and attempts to exact that charge will encourage efforts to seek it free from others. In addition, once information is discovered, it should be made available to all at the cost of dissemination; but then the cost of discovery may not be covered, and consequently the market will underproduce.[3] The same arguments hold for the process of interpreting complex information. It is precisely the inexperienced and less educated—in other words, those who are exposed to the greatest risks—who may have the greatest difficulty obtaining and interpreting information. It is clear that employers do not always have proper incentives to provide complete and adequate information.[4]

Also, information on particular workplace hazards is in part produced and provided by workers themselves. But the workers most severely affected will leave the firm (and the industry), thereby depriving others of a valuable resource. What that means is those industries with high turnover will have relatively less worker-supplied information on hazards and, hence more need for government action. Alternatives include disincentives to turnover in some industries, such as requiring severance pay or the vesting of pension rights. These policies might, in turn, raise costs and unduly impede labor turnover. Such policies and others, including enforcement of strict standards or economic incentives for prevention, could decrease employment opportunities for groups with relatively low skills and urgent desires for income relative to hazard protection. All of which raises vital issues of equity and social policy.

Compensation of workers can be viewed as having two components: Monetary elements, including fringe benefits, and nonmonetary elements, such as safe, healthy, and pleasant working conditions. To some extent higher compensation is considered adequate by workers: For instance, increased wages sometimes may "compensate" for increased risk exposure. As noted above, the distribution of total compensation appears to be less unequal than the distribution of monetary compensation—at least for workers of given skills. Hazards tend to be concentrated, in that a large share of total workplace risk is faced by workers in certain particularly hazardous industries or occupations. Similarly, much pollution is concentrated in certain neighborhoods or areas.[5] Such individuals may be drawn to such areas by the lower property values, (hence, housing prices and rents[6]) due to their low incomes or because of barriers to access to other, more desirable neighborhoods.

It has been suggested that occupational hazards may carry social benefits in that some workers may be exposed to high risks with the result of a higher standard of living for all. For example, asbestos workers now experience substantially earlier mortality than average so

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[3] Unions or trade associations could play a role here.

[4] N. A. Ashford, op. cit., page 336, discusses this under the rubric "inequality of access to information."

[5] Some will receive partial "compensation" in the form of lower property values and hence rents and housing prices. Of course, if pollution increases, present property owners will lose and potential new residents or property owners gain.

[6] For evidence on the relationship between pollution and property values see R. S. Smith op. cit., pp. 46–52 and Jon P. Nelson, "The Effects of Mobile-Source Air and Non-Pollution on Residential Property Values," Report No. DOT–OS–40094, Washington, D.C., 1975.

that "* * * ships and buildings may be properly insulated and the brakes of our automobiles may function efficiently."[7] Ashford notes that it may be preferable on equity grounds to achieve a chosen level of may be preferable on equity grounds to achieve a chosen level of workplace health and safety in a way that distributes hazards more equally among workers, even if other methods would involve smaller "expenditures," and thus be more efficient.[8]

Therefore, it may be desirable to overrule preferences expressed in the market through regulatory action—even if everyone was well-informed about the markets worked "perfectly" to nature and extent of possible consequences and even though there were no financial or other externalities of injury and disease. As Ashford states:

> Many working people, especially the poor and unsettled, members of discriminated against minority groups, and the geographically and occupationally immobile—are presently subjected to the cruel dilemma of a very sharp trade-off between their health and the economic well-being of their families. Considerations of equity and sound justice dictate that a daily assumption of undue risk not be a prerequisite for their claim to reasonable job security and a decent image.[9]

The overall effects of a more equal distribution of safety and health are unclear. Equalized risk reduces the justification for increased wages in risky occupations. However, some workers may prefer increased wages to provide a better life for their families. Thus it is not clear that all or even most citizens prefer increased safety and health at a substantial cost in monetary income or employment opportunities.[10]

Also, presumably the least skilled workers would be among the most likely to be laid off if output decreased due to regulatory requirements. This group may include disproportionate numbers of so-called minority groups.[11]

4. The role of collective bargaining in occupational safety and health

Free market operation does not mean completely independent action by isolated individuals. Unions and collective bargaining have long played an important role in occupational safety and health. A union can afford to acquire and produce information of the sort needed by its members. Presumably unions are less concerned than business firms about keeping such information secret in order to reduce costs. Organized labor unions may be in a better position than government to credibly and effectively communicate information to workers. The possible union role goes beyond information production and dissemina-

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[7] N. A. Ashford, op. cit., p. 360.

[8] Ibid., p. 361. Equity is not defined but may be closely related to equality. It is difficult to see how this could take account of the existence of compensating wage differentials. Also efficiency is not necessarily the same as minimum expenditure. Presumably one aspect of efficiency is to take due account differing of worker preferences for monetary income compared with income in terms of safer or more healthful working conditions.

[9] *Ibid.*, p. 362. Ashford goes on to note that "whatever the alternative value judgments as to what is fair, we should know what the costs are for those alternatives we wish to consider." It is not clear what is meant by "costs," or how they are to be weighed against equality of risk assumption.

[10] This could be particularly acute if equality were achieved by raising "standards" on production of products which could be imported. The result could be greatly decreased employment in the affected industries and vastly lowered well-being of the affected workers.

[11] See Zeckhauser and Nichols, op. cit.

tion. In contract negotiations trade-offs can be made among wages, safety and health, and other dimensions of total compensation. These decisions will necessarily consider the preferences of workers (at least insofar as they are reflected by the actions of the negotiators) and potential costs to the employers.[12] Workers have a variety of common-law and statutory rights to refuse hazardous work.[13] Union organization can help assure these rights. There are some rights to strike against hazardous conditions.[14] Other roles of collective bargaining and unions include the development of joint labor-management health and safety committees [15] as are mandated by law in a number of foreign countries.[16] There the work forces are generally more heavily unionized than in the United States, so the union role is presumably stronger.[17]

While unions in the United States have not historically emphasized health and safety in collective bargaining, the picture appears to be changing.[18] A survey reported by the Bureau of National Affairs found occupational safety and health provisions in 82 percent of the sample contracts, up from 65 percent of 1970.[19] Table 5–3 from that survey indicates the relative frequency of a variety of safety and health provisions.

Contract provisions include: Procedures for resolving safety and health disputes, specification of standards, inspections, support for research into health hazards, and requirements that workers be informed of the toxicity of chemicals in plants.[20] For example, a 1975 steel industry agreement mandated certain engineering changes to protect workers from coke-oven emissions.[21] In 1973 the Oil, Chemical, & Atomic Workers threatened to strike unless contracts included health and safety provisions.[22] The labor demands included:

> (1) joint labor-management health and safety committees with power over workplace conditions; (2) periodic health surveys of plants by independent health consultants approved by both labor and management; (3) medical examinations of workers at company expense; and (4) the provision of annual employee morbidity and mortality data by the company.[23]

Noise abatement was seen as a major issue in U.A.W. contract negotiations in 1976,[24] and plant noise was an issue in two strikes in recent years at a Ford Motor Co., stamping plant near Chicago.[25]

Therefore, organized labor has capability in providing, to some extent, occupational safety and health. Whether that in fact occurs, or with sufficient consistency is another matter. Even for unionized

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[12] One difficulty is that uniform contract provisions for different firms and industries may result in very imperfect adjustments.

[13] Nicholas A. Ashford, "The Changing Role of Occupational Health and Safety in Industrial Relations," paper presented in the 20th Anniversary Symposium of the School of Industrial and Labor Relations, Michigan State University, November 5, 1976, pp. 3–9.

[14] Ibid., pp. 9–20.

[15] Ibid.

[16] See N. A. Ashford, Crisis in the Workplace, op. cit., pages 501–508. With some exceptions for small firms, countries with legally required committees include Belgium, France, the Netherlands, Sweden, Finland, and the Federal Republic of Germany.

[17] N. A. Ashford, Crisis in the Workplace, op. cit., p. 507.

[18] N. A. Ashford, "The Role of Occupational Health and Safety in Industrial Relations," op. cit., page 21.

[19] Thomas H. Kelly, Recent Contractual Developments in Safety and Health, unpublished, cited in Ibid. Also see Zeckhauser and Nichols, op. cit.

[20] Ibid. p. 23.

[21] Ibid., p. 24.

[22] Ibid.

[23] Ibid.

[24] "Factory Noise is Union's Target," *New York Times*, May 2, 1976, p. 1.

[25] Ibid., p. 66.

TABLE 5–3. SAFETY AND HEALTH PROVISIONS BY INDUSTRY (FREQUENCY EXPRESSED AS PERCENTAGE OF SAMPLED CONTRACTS IN EACH INDUSTRY)

	Provisions	General statement of responsibility	Company to comply with laws	Company provides safety equipment	Company provides first aid	Physical examinations	Accident investigations	Hazardous work provisions	Safety committees
All industries	82	50	26	36	21	24	13	15	39
Manufacturing	85	56	24	38	23	24	15	13	47
Apparel	56	44	22						11
Chemicals	88	56	19	69	25	38	19	25	75
Electrical machinery	65	46	23	23	19	12	4	8	31
Fabricated metals	95	63	37	79	32	32	26	39	53
Food	79	45	21	38	21	21	3	7	45
Furniture	100	50	17	17	17	17			33
Leather	100	50					25		50
Lumber	71	29			14		29		29
Machinery	78	64	6	45	27	15	39		45
Paper	100	71	14	21	36	43		14	43
Petroleum	86	33		17	17	86	43	14	43
Primary metals	92	64	44	64	16	20	32	28	64
Printing	86	38	75					13	
Rubber	100	83	50	83	33	83	67		83
Stone, clay, and glass	92	62	15	46	46	46	15	8	54
Textiles	78	56	11		11	6	11		17
Transportation equipment	97	63	40	43	34	29	17	23	66
Nonmanufacturing	75	38	30	31	16	25	8	21	23
Communications	89	44	22	33	22	22		11	11
Construction	79	50	50	50	21	4	4	33	4
Insurance and finance	17	17	17						16
Maritime	63	25	25	50	38	38			25
Mining	100	75	42	92	33	58	25	50	92
Retail trade	76	22	22		6	17	39	11	6
Services	42	5	38	5	11	5			5
Transportation	100	47	32	26	16	68	16	42	32
Utilities	80	50		30		10	10	10	40

Source: Thomas H. Kelley, op. cit., cited in N. A. Ashford, "The Role of Occupational Health and Safety in Industrial Relations," op. cit., p. 22.

industries, Government-set standards and other activities may still be very important. They may provide information and serve as goals in negotiations. Worker and employee negotiations appear able to correctly weigh all the relevant private [26] considerations. Negotiation could well be even more efficient than Government action. Thus Government occupational safety and health actions might well focus on nonunionized sectors; emphasizing industries with relatively mobile and unskilled workers, could provide protection where it is most needed.

F. The Use and Limitation of Liability Suits To Provide Incentives and Compensation

Both by statute and common law, liability can be assigned for damages [27] The *caveat emptor* principle is one such assignment. Assigning liability to producers and employers would lead them to practice prevention to minimize the expected total costs of prevention and compensation. This system could be efficient if firms' expected liability equaled total expected damages, and if the costs of preventive activity by consumers and workers were high relative to those of firms.[28] There are a number of reasons to believe that a pure liability system of health and safety regulations would too frequently be fatally flawed, even though liability suits can play a constructive role in a most difficult and sensitive area.

First, liability is limited by firm and individual net worth. Firms faced with large claims can go into bankruptcy limiting both prevention incentives and possible compensation. For example, not only are the possible damages from a nuclear plant disaster many times greater than the net worth of even the largest utility, but the Price-Anderson Act in that regard limits total utility liability.[29] This and other liability limits, such as the Warsaw Convention, reduce incentives for prevention below what they would otherwise be. Of course, legal limits would be relatively easy to change. But setting proper limits and estimating damages would be very difficult, as some costs—such as pain and suffering—are both very real and inherently subjective.[30]

Also uncertainty about causal relationships between hazards and injuries detracts from the effectiveness of a liability system. Such links are difficult to establish, particularly for diseases with low incidence and long latency periods, as is the case with cancer. Suppose that regu-

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[26] Questions of financial and other externalities would still remain.

[27] The basic economic analysis of the effect of alternative assignments of liability was first provided in Ronald Coase. "The Problem of Social Cost," Journal of Law and Economics, March, 1960, pp. 1–44. See also Walter O, "The Economics of Product Safety." Bell Journal of Economics and Management Science, 4 (1)[1973], pages 8–28, and Roland McKean, "Products Liability: Implications of Some Changing Property Rights," Quarterly Journal of Economics, 84 (1970), 611–626.

[28] The complete conditions are more complex. As Coase, *op. cit.*, argues, if "transaction" costs are very low, i.e., if all parties can easily bargain and have full information, then the rule of liability may not affect resource allocation. The essential reason is that under such conditions it will be very easy to discover the minimum-cost preventer and it will also be easy for those damaged (or in a position to be damaged) to induce the potential damagers to change their behavior. Or the potential "damagers" could induce the potential "damagees" to adjust, thereby lowering possibly excessive external damage. But bargaining and information are costly. Imposing first-instance liability on a relatively high-cost preventer may result in higher than necessary costs, because it may be difficult to arrange a transaction with a lower cost preventer. See Coase, op. cit., and Walter Oi, op cit.

[29] This limitation might be viewed as an indirect or implicit subsidy to nuclear power.

[30] A number of studies have attempted to "measure," e.g. ,the value of life by estimating pay differentials for increases of risk from very low to slightly greater levels. See Richard Zeckhauser, "Procedures for Valuing Lives," Public Policy vol. xxiii, Fall 1975, no. 4, pp. 419–464.

lar cigarette use raised the probability of cancer by two percent. In liability actions, the standard of proof is that "a preponderance of evidence substantiates the claim that the damage was due to a hazard that the defendant could reasonably have prevented." [31] Under that standard it would indeed be very difficult for a lung cancer victim to sue a cigarette manufacturer for damages. Other sources arguably contributed to the disease, and identifying a primary cause or attributing a "share" of causation to cigarettes would be very nearly impossible.

The burden of proof is on the party claiming damages. With a high uncertainty about causation, damages will too infrequently be awarded. Thus incentives for prevention will be small. On the other hand, holding defendants to a strict liability standard would result, in the above cancer example, in frequent awards of damages, even though in fact the chemical was only partially responsible. In that case, manufacturers of certain products would in effect act as insurers for adverse consequences which were, in any event, traced to that product.[32] The price of the affected product would rise in proportion of the costs. In some cases, the costs of prevention would likely be so great as to force such products off the market.[33]

1. Uncertainty and the effectiveness of the liability system

The liability system may be reasonably effective when damages can with some certainty be traced to specific causes, and when damages are not like to exceed limits set by net worth. For events of uncertain causation, including many occupational diseases, the system could be grossly inefficient. At the other extreme, the high costs of using the legal system suggest that suits will be less effective in inducing prevention when damages are small. Class action suits can improve incentives, by allowing the pooling of damages and the sharing of legal expenses. However, a further obstacle is the jurisdictional requirement in Federal courts that each party allege damages in excess of $10,000. That requirement cannot be satisfied by pooling claims.[34]

The contrast between two food-borne diseases, salmonella and botulism, provides an instructive illustration of the uses and limitations of the liability system.[35] Even a very small amount of toxin from the bacillus clostridium botulinum can be deadly. Toxins from the bacillus salmonella can cause a range of unpleasant symptoms but are rarely fatal. On a "severity of impact" criterion, a strict standard or other similar government action would appear appropriate against botulism. But very few botulism cases are caused by commercially canned foods.[36] Of the 529 cases of botulism reported in the United States, between 1889 and 1969, 470 were due to home-preserved products, and less than 1 per year was attributed to commercial canners.[37]

Federal regulation of home canning would be most difficult; in that regard information dissemination would appear more appropriate.

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[31] See Noll, Cornell, and Weingast, op. cit.
[32] The analogy is due to Walter Oi, op. cit.
[33] Walter Oi, op. cit. Oi notes that it is also possible for production of the riskier grade to rise.
[34] USC 1332; *Zahn* v. *International Paper Co.*, 414 U.S. 291 (1973).
[35] This discussion draws on Hinich and Staelin, op. cit.
[36] D.A. Kanter and R. K. Lynt, Jr., "Botulism," *Nutration Reviews*, 31, No. 9 (1973). cited in Hinich and Staelin. op. cit., p. 49.
[37] Hinich and Staelin, op. cit. in appendix to this volume.

Existing evidence indicates that commercial canners are not the major source of the disease. Voluntary action, rather than regulatory movements, seems to account for that outcome. As Hinich and Staelin have pointed out, "Professional canners know the types of foods which are susceptible to botulinum contamination, and the heating techniques for avoiding contamination. Professionals are also aware that because the botulism bacillus cannot grow in oxygen, cases can usually be unambiguously traced back to the manufacturer. Consequently, commercial canners find it in their own interest to avoid the chances of botulism, and thus botulism is rare." [38] The fact that botulism can be accurately diagnosed and traced to manufacturers means that liability suits may be a successful remedy. And even without such suits, traceability implies that manufacturers of contaminated food would suffer enormous losses of good will. The ease of identifying cause implies that suits (and fear of indirect consequences) can induce substantial prevention.

In contrast to botulism, the effect of most hazardous food contaminants are difficult to trace to normal use of a specific product.[39] Toxin from the bacillus salmonella can contaminate food as easily from an unsanitary kitchen as from an unsanitary factory.[40] The normal preparation of some potential salmonella carriers, such as mayonnaise, does not frequently involve heating which would destroy the toxin.[41] The symptoms of salmonella poisoning are ambiguous, and not all of those exposed will become ill. For example, if mayonnaise in a restaurant is contaminated because of poor manufacturing practices, some customers will become ill several hours after dining.[42] Some may blame the illness on the restaurant food, but it is most unlikely that many would blame the mayonnaise. The restaurant owner may lose customers but without necessarily knowing the specific cause. Certainly, some detective work would be required to trace the salmonella to the mayonnaise. Unless the restaurant owner tests other containers of mayonnaise from the same production batch, the contamination cannot be clearly blamed on the manufacturer, and the real culprit may escape. For salmonella as for many food contaminants, ". . . it is generally difficult to establish the causal nexus between the contaminants, the normal natural and artificial ingredients in a food, the storage and preparation and the diagnosed disease." [43] Because of this it would be most difficult to establish liability. The relatively minor injuries coupled with ambiguous and sometimes mild symptoms of salmonella and many diseases effectively discouraged legal remedies.[44]

So too, unlike the case for botulism, manufactures will have relatively little fear either of suits, or of adverse publicity and loss of good will. In such cases, neither threatened civil actions nor market pressures are likely to provide sufficient incentives for prevention. Similar analysis could apply to nutritional quality and economic adulteration or misbranding, since it is difficult to verify the cause and effect and individual damages may typically be small.

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[38] Ibid.
[39] Ibid.
[40] Ibid.
[41] Ibid.
[42] This example is from Ibid.
[43] Ibid.
[44] In some cases, class actions might be justified.

In summary civil liability actions may be effective for hazards with clear cause and effect, and dramatic—perhaps irreversible—damage of a significant nature. In other cases, such as the mayonnaise-salmonella example, regulation of the production or output process may appropriately assure "reasonable" safety or quality at a small increase in unit cost. This is not to say that all or even many severe and dramatic hazards should be left to the courts. Some hazards may generate large external effects such as epidemic causing diseases, and so be appropriate for more direct control.

2. Liability suits and occupational safety and health

In the occupational safety and health area, lawsuits by workers against employers or even supervisors are becoming more common.[45] Such suits can internalize many hazard costs. The legal rights of employees to sue employers for injury are limited by workman's compensation laws.[46] But, as Ashford notes, the Occupational Safety and Health Act of 1970 (OSH Act) has an important impact in that regard:

> Because the OSH Act does create a general duty of care and because specific substances can become identified as harmful, a private cause of action under the common law of tort could succeed—and not only against employers, but against other supervisory personnel as well, if not otherwise barred by workers' compensation legislation.
>
> Worker suits against employers or even supervisors are becoming increasingly successful—and the violation of an OSHA standard may constitute negligence *per se* in a personal injury suit. These suits are possible in the case of occupational disease because either (1) diseases are not often covered under workers' compensation—ironically as a result of employer and insurance resistance to their being recognized as occupational in origin; (2) the employer's negligent nondisclosure to an employee of a disease which becomes by that omission nonoccupational by definition; or (3) there is such wanton disregard for workers' safety that the harm is not considered an accident but rather willful misconduct and hence does not come within the insurable definition.[47]

Although the effect of the OSH Act in this regard is not yet clear, indications are that such suits could become increasingly important. Company doctors and supervisors have been sued, and supervisors of laboratories could be possible targets.[48] And some unions are reputedly concerned that suits by members may allege inadequate bargaining on safety and health issues.[49]

Class action suits may be effective. For example, in 1974 a suit for $100 million was filed in federal court on behalf of former employees of the Pittsburgh Corning Corporation's Tyler, Texas asbestos plant.[50] The suit alleged negligence by both the company and a trade association, in knowingly exposing workers to high asbestos levels, failing to

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[45] N. A. Ashford, "The Role of Occupational Health and Safety in Industrial Relations," op. cit., p. 27.
[46] See N. A. Ashford, Crisis in the Workplace, op. cit., pp. 388–389.
[47] N. A. Ashford, "The Role of Occupational Health and Safety in Industrial Relations," op. cit., pp. 27–28.
[48] Ibid. p. 28.
[49] *Yardel v. PPA Industries, Inc.* Discussed in N. A. Ashford, Crisis in the Workplace, op. cit., page 779. See Occupational Safety and Health Reporter, Vol. 3, No. 32 (January 10, 1974), pp. 995–996.
[50] Ibid.

correct hazards and not warning employees.[51] Though Workmen's Compensation limits workers suits against employers, the manufacturers of hazardous substances or injury-causing machines may be held liable.

> ". . . Federal panels and academic experts have agreed that most state worker compensation laws do not provide equitable relief, so the injured worker has increasingly begun suing the manufacturers of whatever machine is involved in an injury. And, under common law liability requirements, the original manufacturer of the product—a machine tool maker, may—[sic] declared liable even though he may not have been responsible for maintenance or modification of the product for years." [52]

Chemical producers are reportedly concerned about liability for the health impacts of their product.[53] Such far-reaching liability may greatly and unduly escalate costs in some areas, as manufacturers may not in fact be responsible for accidents due to modification or misuse of equipment, and manufacturer-created design or product changes may not be the lowest cost way of inducing prevention. It was reported that 75 percent of the claims against members of the National Machine Tool Builders Association involve machines 10 or more years old.[54] Further, it was reported that a small proportion of cases involved mechanical malfunction of a machine, whereas most accidents were caused by poor maintenance, training, or safety equipment.[55] If this evidence is valid, strict manufacturer liability would appear to be a very costly way of reducing accidents. But given the "no-employer fault" nature of workmen's compensation and the relatively small size of compensation awards, such suits are likely to increase.

One promising alternative would be to make compliance with all relevant health and safety standards a defense against a suit brought by employers.

> In other words, why no decree that, regardless of the worker compensation system, an employee could sue his employer if the accident resulted from employer violations of the OSHA laws? And make the reverse true, as well—workers would not be able to sue manufacturers if structural or mechanical failures in the machines could not be shown and would not be able to sue their employers if it could be proved that the companies complied with every relevant safety standard.[56]

OSHA standards would then become a basis for private legal actions. The need for OSHA inspection and enforcement would be reduced. Industry and labor would presumably press for clearer standards, and more suits would be directed against groups who are often more capable of preventing accidents at low cost.

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[51] "A Way Out on Product Liability," New York Times, December 5, 1976, Section 3, p. 18.
[52] Ibid.
[53] "Chemical Firms Fret Over Product Liability," Chemical and Engineering News (August 9, 1976), page 8, cited in N. A. Ashford, "The Role of Occupational Health and Safety in Industrial Relations,' op. cit., pp. 29–30.
[54] Testimony of James H. Mark, National Machine Tool Builders Association, before the Senate Small Business Committee, September 1976, reported in "A Way Out on Product Liability," op. cit.
[55] *Ibid.* This is consistent with evidence cited in Zeckhauser and Nichols, op. cit.
[56] This was suggested in "A Way Out on Product Liability," op. cit.

G. Insurance: Risk-Spreading, Incentives, and Regulation

Insurance allows individuals and firms to spread risk and gain compensation for damages. Private insurance tends to be provided at actuarial rates reflecting projected damages and administrative costs.[57] These rates can provide incentives for prevention and can be constructed to internalize external effects. But there is an inherent conflict between the risk-spreading inherent in insurance and the need to focus incentives on the lowest cost preventers. Some actuarial rates may be considered "too high" for risky groups. One solution, adopted in the Federal Flood Insurance Program, has been to subsidize insurance rates charged for certain classes of risks. It may also be advisable to encourage the purchase of insurance, perhaps to lower the demand for other forms of assistance, and direct subsidy is one way to accomplish that objective. Federal insurance programs are very wide in scope; one source lists twenty-three such programs ranging from old age and survivors insurance (social security), which in 1973 paid benefits of $41.3 billion, to the student loan insurance funds which in 1973 insured $4.0 billion in loans.[58] In the housing area alone, five agencies in 1973 insured $163.8 billion of loans and mortgages. Many of these programs appear to be designed to transfer income to certain groups. Insurance in financial areas by the FDIC and the Federal Savings and Loan Insurance Board may lower the risk and consequences of bank failures, and so guard against external effects.

The activities of the Overseas Private Investment Corporation and Export-Import Bank (which insured over $19 billion in loans in 1973) might best be termed as subsidies to foreign trade. Or the programs could be viewed as encouraging foreign investment which is presumed to yield positive external effects on the U.S. position in the world. But most Federal insurance programs appear not to be directly related to the problems of external effects discussed in this report. Government required insurance of various forms does internalize some such effects. For example, workmen's compensation has an effect in that regard, as does Federal flood insurance programs.

The Government does have a proper role in insurance. There has been a tendency for the Federal Government to become the "insurer of last resort," providing coverage when private markets fail to do so at rates considered fair or low enough to encourage widespread coverage. Such Federal programs include flood insurance, crop insurance, and crime insurance. However the insurance subsidy may encourage increased risk-taking and result in higher Federal expenditures. This, in turn, can lead to demands for regulation to contain expenditures.

Government insurance programs may also be justified, because private firms may not be able to impose appropriate restraints. Also some forms of insurance may not be considered profitable by the private sector. If being insured tends to encourage greater risk-taking, actuarial rates would subsequently rise, thus discouraging purchase of in-

[57] This abstracts from the possible effects of insurance regulation and the effects of legal constraints on the classifications that may be used setting rates. For example, a classification based on ethnic background might make actuarial sense yet violate anti-discrimination laws.

[58] C. Wilcox and W. G. Shepherd, "Public Policies Toward Business," op. cit., p. 540.

surance except by those who are virtually certain of suffering damages. Thus the enterprise would be unprofitable. This is known as the problem of "moral hazard." In such cases insurance ceases to be a risk spreading device and becomes a pure transfer mechanism.[59]

1. Experience rating and the incentive provided by insurance rates

Experience rating—basing future insurance premiums on a firm's past claim experience—may be useful in adjusting insurance rates to take account of differences in risk. If premiums are accurately and promptly adjusted to reflect risk, insurance can provide incentives for prevention. But adjusting premiums for risk is not easy. One method is to use indicators of risk to design rates. Providers of automobile insurance use predictors such as occupation, sex, age, and number of traffic violations. Fire insurance rates are based on variables including types of construction and location. Insurance is also frequently "experience rated," with rates adjusted to reflect past claim experience. Such ratings may be misleading, as past experience may be a poor guide to likely future claims. Some accidents may be just that—random events which could not have been foreseen, planned for, or dealt with by systematic preventive measures. Then, pure experience rating could inappropriately place individuals or firms who had experienced a run of "bad luck" into higher rate classes, a result that may be judged unfair. If the premium schedule escalates sharply as past claims rise, the unlucky individuals may face exaggerated incentives to prevent accidents and be induced to incur higher prevention costs than others with the same likelihood of future claims or underlying risk. But, again the effect will be to induce increased prevention.

Experience may be the only readily available indicator of the risk of employment in one firm as opposed to another of the same general characteristics. Since injury rates in small firms can be greatly affected by unusual random events, experience rating is less appropriate for them than for larger firms where unusual events will tend to average out.

Workmen's compensation insurance reflects this problem. Initially the major objectives of workmen's compensation legislation were: "(1) To provide workers with more equitable and reliable compensation for injuries than was available through tort law, and (2) to to give employers a stronger incentive to provide safe working conditions by forcing them to internalize a greater share of the cost. . . ." [60, 61] Of course, internalization can occur only to the extent that the insurance is experience rated or otherwise reflects risk. Under workmen's compensation legislation, workers in the United States have little right to sue their employers for negligence.

As a result of this "no-fault" system, the incentive aspects of workmen's compensation assume even more importance. Only for the largest firms is experience rating complete; only about 20 percent of

[59] Kenneth Arrow, "The Organization of Economic Activity: Issue Pertinent to the Choice of Market vs. Nonmarket Allocation," in Joint Economic Committee, "The Analysis and Evaluation of Public Expenditures: The PPB system," Vol. I. (U.S. Government Printing Office, Washington, D.C. 1969), pp. 47–64. The basic sources on matters of moral hazard and incentive effects of insurance are Kenneth J. Arrow, "Uncertainty and the Welfare Economics of Medical Care," American Economic Review, Vol. 53. No. 56 (December 1963), pp. 941–975; and Mark V. Pauly, "The Economics of Moral Hazard: Comment," American Economic Review, Vol. 58, No. 3 (June 1968), pp. 531–537.

[60, 61] See Zeckhauser and Nichols, op. cit.

the firms, though, accounting for substantially more than 20 percent of employment, are even partially experience rated. Premiums for firms from small up to quite substantial sizes are based largely on the accident rates of others in the same industry and size class.[62] Therefore, costs of increased accidents in any one firm are largely borne by others. The insurance rating system thus creates an externality and reduces incentives to prevent accidents.

H. Performance Versus Specification Standards and the Roles of Licensure, Certification, and Information Disclosure

As previously discussed, in situations where consumer information is highly flawed and difficult to appraise, or where the costs or risks of mistakes are large, government action may be appropriate to license certain occupations or activities. Such licenses can take several forms. At one extreme is mandatory licensure: as in the case of physicians and lawyers, a license may be required in order to engage in the activity, and failure to comply could lead to the imposition of civil or criminal sanctions. Alternatively, the government might administer examinations or otherwise verify ability and issue "certificates of competence." Provided the certificates were known and understood, customers could seek out those who are certified. But unlike mandatory licensure, there would be no requirement that all practitioners be certified. Rather, the presence or absence of a certificate would be an indicator of competence or quality.

Determining what kind of licensure is appropriate should involve consideration of the following kinds of questions: Are consumers capable of informed judgments? Are the risks of mistakes great? Are there substantial spillover effects which create an overriding public interest justifying the restriction? Licensing members of a trade or profession is easily distinguishable from licensure of a nuclear reactor. To varying degrees, consumers can, as individuals, make informed judgments on the qualifications, and appraise the performance, of many occupations. The consequences of mistakes vary widely. For example, although some errors of judgment by doctors can lead to death or permanent disability, the consequences are slight for many other health problems. The risks are not nearly as great with other occupations presently subject to mandatory licensure. Also, generally, the effects are relatively well localized and not irreversible. For those reasons, in at least many areas of trade and professional practice, government monitored certification of training or knowledge might be more appropriate than uniform mandatory licensing.

1. Circumstances in which mandatory licensure may be appropriate

It appears that the mandatory licensure approach gains merit as the difficulty of appraising information, the possibility of spillover effects, and the risk from mistakes increase. At present, all nuclear power plants may operate only if licensed by the Nuclear Regulatory Commission (NRC). The license certifies that the plant has met a series of highly detailed technical standards, that site geology has been re-

[62] For example, for firms with 1,000 employees, a 1-percent increase in accident rate ultimately causes only a one-half percent increase in premium. See Louise Russell, "Safety Incentives of Workmen's Compensation Insurance," Journal of Human Resources (Summer 1974), p. 367.

viewed for potential hazards, that safety and backup systems meet standards, and that personnel are well-trained. The grave risks posed by possible nuclear disaster suggest the need for a mandatory licensing scheme.

That approach is also encouraged by the complex nature of certain activities. The primary objective of Federal regulation of nuclear facilities is public health and safety, rather than the specification of technology of production. Yet the Federal agencies also specify details of allowable production processes for nuclear plants. And, in that area, mere certification without mandatory licensing and standards would be inadequate for several reasons. Public bodies are more capable than individuals in reaching informed judgments on the merits of reactors certified to meet a range of safety standards. A public judgment must be made, because the determinants of reactor safety are not fully known or understood. Therefore it is not possible to simply require a *performance* standard—such as that reactors be "safe," as NHTSA might require certain maximum automobile braking distances under specified conditions. In other words, in such a complex area as nuclear safety, the standards set must frequently relate to specifications of the production process: that certain types of pumps and grades of steels be used, and so on. It is not always possible to verify major aspects of ultimate performance quality by means of tests or examinations.

A much different situation is posed when a consumer chooses to have plumbing work done by an otherwise expert person not licensed by the state. In that situation, the potential for harm is slight. Thus the determining criteria for various licensure approaches include consideration of complexity, difficulty of informed consumer judgment, magnitude of potential harm, and potential spillover or external effects. The more these factors are present, the stronger the case for mandatory licensing specifying details of the production process. To the extent that the risks and potential spillover are small, the process is simple and relatively easy for consumer to appraise, voluntary certification or even complete free market operation become more attractive options.

Intermediate positions are possible: If performance can be appraised at tolerable cost, even if mandatory licensing is deemed essential, the license conditions need not specify such factors as equipment design or personnel training. Rather, a license could be granted upon demonstration of the desired level of performance. A main advantage of such "performance standards" as opposed to "specification standards," which regulate in detail the production process, is that the former do not prevent the introduction of new technologies and allow experimentation to determine the best way of obtaining desired result under different circumstances.

For example, a desired standard for automobile braking distance might be obtained by rules on the design of brakes, tires, or suspension systems, or a mix of all three. Granting the merit of the standard, the most appropriate means of achieving it will probably differ depending on the automobile and the manufacturer. Specifying the design of brakes, tires, and suspension could unduly restrict choice and

raise costs. Thus it is preferable to set a performance standard which all vehicles must meet, leaving the manner of accomplishment to producers.

2. Standards, incentives, and informational alternatives

Federal regulation now employs a wide range of standards, some of which are established by statute and others set by rule. In contrast to regulations, most standards set by statute tend to be very broad. For example, the "general duty clause" of the Occupational Safety and Health Act of 1970 states that each employer "shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees." By contrast the OSHA standard for railings is far more specific, requiring that standard railing have a top and intermediate rail, a height of 42 inches from upper surface of top rail to floor or platform, as well as other detailed requirements.[63] This section discusses the merits of and rationales for various types of standards. The relative merits of specification versus performance standards are further considered, as are merits of product and process standards versus information provisions and incentives.

3. The effect of standards depends on enforcement

A major perceived benefit of standards is based on the questionable notion that setting standards guarantees compliance, whereas the effects of incentives and information are slow, uncertain, and uneven. This view necessarily assumes adequate enforcement resources, effective sanctions or consequential "moral suasion" effects of standards. Moral suasion surely does occur, though its impact is uneven. Also undue reliance upon that alone, without effective sanctions, could result in "moral" producers being driven from the market, due to their higher costs of compliance.[64]

Effective sanction and enforcement mechanisms are critically important to a standards approach. For example, in the past, the expected penalties from noncompliance with OSHA standards were very low, on the order of $1 per violation detected.[65] This resulted from both very infrequent inspections and low assessed penalties for detected violations. Over all, such penalties appeared to provide very little incentive for compliance, and studies of OSHA performance disclose little or no effect on accident rates.[66] There is evidence to indicate that FDA inspection of food manufacturing plants also has little effect on

[63] OSHA Safety and Health Standards Digest, op. cit., p. 29.

[64] This is not to say that compliance with regulations will not on occasion yield unexpected benefits in terms of lowered costs, increased profits or improved technology. For example, the 3M corporation found that a pollution control approach stressing product reformulation, equipment changes, process modification and materials recovery in some instances allowed savings in operating costs or capital expenditures. Those steps also reduced pollution. See "3M Gains by Averting Pollution," *Business Week*, November 22, 1976, page 72. It is possible that the "shock effect" of having to comply with standards will result in the discovery of opportunities for cost savings. It seems most unlikely that such cost savings would generally exceed the costs of compliance with standards. It also appears unrealistic to assume that technology can always readily be developed to allow compliance with arbitrarily "tight" standards without severe economic costs. Some writers appear to come close to assuming or arguing that this is the case. See, e.g., John E. Bonine, "The Evolution of 'Technology-Forcing' In the Clean Air Act." Environment Report, Monograph No. 21, Bureau of National Affairs, July 25, 1975, Vol. 6, Number 13.

[65] Zeckhauser and Nichols, op cit. in Appendix to this volume.

[66] Ibid.

compliance with standards of good manufacturing practice.[67] Again, inspections are infrequent, occurring on the average of once in 5.5 years. [68] In addition, perhaps because of differing judicial or enforcement policies, the effect of FDA inspections, and hence standards, appears to vary greatly among various parts of the country.

Thus the effects of some present standards enforcement appear both slight and uneven. Deadlines for compliance with pollution standards have been frequently extended, which certainly raises questions about their effectiveness.[69] EPA itself appears to have acknowledged that its present approach to air pollution control has not functioned as desired.[70] That is not to say that the standards approach has enjoyed no success. Rather, the evidence for its effectiveness is not strong, nor has its superiority over other approaches been persuasively documented.

4. Circumstances when specification standards may be desirable and the uses and limitations of labeling and disclosure

All the same, the form standards take can matter a great deal, as illustrated by Federal regulation intended to insure safe and healthful food products. Many FDA standards for food safety are based on regulation of the production process in accord with "Good Manufacturing Practices" (GMP) standards. These standards, which have the force of law, concern such maters as equipment design, and materials, cooking times, and work practices.[71] Food is considered "adulterated", and thus subject to seizure, if not produced in accordance with the appropriate GMP standards.[72]

The specifications standards approach may be desirable, if risks from regulatory error are great and the market proves ill-equipped to handle the situation—as in the case of carcinogens or cumulative poisons which involve long-term effects. Standards do carry costs. A part of the regulatory costs are shifted initially to producers and ultimately to consumers.[73] But in addition, the resulting standardization of production processes may retard or discharge technical change.[74]

Specification type standards could also be preferable if monitoring the output for desired characteristics would be very expensive or when the side effects on costs and technology would be slight. For example, if there were general agreement on a "safe" manufacturing method for a particular product, and that method produced desired results, a specification standard would be useful. A stable and simple technology, coupled with relatively constant pattern of consumer tastes, could minimize the potential for harmful effects on technical change and produce variety. Similarly, such standards pose less potential for economic harm when consumer tastes are relatively homogeneous, that is when the losses from restricted product variety are small. And the possible consumer harm will be lower if the cost differences

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[67] Hinich and Staelin, op. cit. in Appendix to this volume.
[68] Ibid.
[69] See Larry Ruff, op. cit.
[70] See "EPA Sources Say Agency Ended Efforts to Cut Auto Smog in Cities," New York Times, January 14, 1977, p. 1.
[71] Hinich and Staelin, op. cit.
[72] Ibid.
[73] Ibid.
[74] Ibid.

among various potential product "grades" are small. In such cases, requiring all products to be safe will not deprive consumers of low cost options.

Possible alternatives to these "specification" standards include performance standards based on output characteristics, and requirements for dissemination of information such as labeling, product disclosures, and restraints on advertising content.

5. Problems and effects of providing information: The FTC's proposed rule on nutritional claims and disclosures

Information as an alternative has drawbacks. Consumer ability to understand and process information may be limited, and that fact certainly must be taken into account when designing labels.

For example, consumers may obtain relatively little useful information from the original FTC proposed nutritional disclosure in video advertising, because so many statistics are conveyed in such a short time. Of course, from the manufacturer's point of view, the disclosure requirement necessarily means that there is less time available for other product claims. If consumers do not find the information useable, and do not respond to it by altering their purchases, the main effect would be to raise advertising costs for products subject to the requirement.[75]

Thus the result of implementing such a rule may be less rather than more nutritional information provided in advertising. Further, the proposed nutritional disclosure rule would have prohibited claims of nutritional superiority unless the product contained over 10 percent or more of the RDA of major nutrients than the compared product Thus, under the proposal, Total cereal would not be able to claim nutritional superiority to a typical "natural cereal" because of greater vitamin content since it does not sufficiently exceed the natural cereal in calcium content.[76] In addition, the originally proposed video disclosure would consume about 50 percent of a 30-second television spot. The result could be a decreased incentive to advertise nutritional characteristics. If the claim had been allowed some consumers might possibly have been misled with respect to calcium content, or led to believe that Total was nutritionally superior in all respects. But it does not appear likely that many consumers would suffer extreme harm from allowing the disclosure.

If the regulation decreased the supply of nutritional information from manufacturers all consumers might suffer, particularly those with poor home or school training in nutrition. These may be low-income or otherwise disadvantaged consumers. Alternatives which could have less adverse effects on the cost of providing nutritional information include "scoring" systems for products which produce a single numerical indication of nutritional value. This has been done for bread, cereals, and other foods.[77] Any such indicators will of course be unable to take account of differences in individual needs because the indicator would necessarily involve the use of some given relative weighting of, for example, protein and vitamin A. Manufacturers might have undue

[75] See Hinich and Staelin, op. cit.
[76] Ibid.
[77] Ibid.

incentives to maximize their "nutrition ratings", perhaps at the expense of attention to other product attributes. Such a system appears relatively effective in helping the average consumer, with typical nutritional needs and concerns, make better choices. Consumers with special needs or problems might be less well served though the "typical" consumer would probably gain.

For example, less educated or foreign speaking consumers and workers may be unable to process information, and so may go relatively unprotected. An advantage of the standards or "banning" approach to regulation is greater protection of these consumers against hazards or deceptions than would be available under a labeling disclosure. Yet is that cost effective? If most consumers would be well served by information, the costs of the standards or "banning" approach may be higher than needed to serve majority consumer interests. Again, the degree of hazard is an important consideration, even though all consumers may be paying for the benefit of a few.

The proposed rule governing nutritional disclosures has undergone intense study and will most probably not be issued in its original form. Yet, the discussion of this section illustrates that the development of effective information-based methods of consumer protection is far from simple.

C. Federal food regulation: Product standards versus labeling

Yet Federal food regulation is arguably less concerned with severe or irreversible consequences than with regulating aspects of the production process, all of which possibly is of value to consumers and may be considered beneficial by producers. The true test of health, safety and nutritional attributes of food presumably is the characteristics of the final product, rather than the particular process used or on the aesthetic characteristics of the ingredients. Why, then, regulate the process rather than monitor product characteristics? If a standards or banning approach is to be used, why not have standards on final product characteristics? One reason is that it may be cheaper to regulate the process than to monitor the product. Another answer is that consumers may care about the production process independent of product characteristics. Consumers may value the notion that their bread is free of insect parts or that their steaks came from healthy animals, even though the hazard is negligible or nonexistent and observable product "quality" is not affected in any way. The case study of food regulation, conducted in connection with this report, noted that:

> . . . the concern for food is deeply rooted in human values and emotions. Food is more than a collection of chemicals we need to live. The quality of food is viewed by many as symbolizing the quality of their lives . . . For orthodox Jews, the restrictions of the Jewish dietary laws are of extreme importance for living a good life. Moslems as well as Jews consider pork as unclean food. Hindus hold various foods to be unclean. Regardless of religious beliefs, most consumers want their food to be as safe and free from impurities as possible; even from such impurities as microscopic amounts of sterilized tomato worms which pose no health risks (so called aesthetic contamination). The willingness and ability to pay for extremly pure foods varies among consumers.

All these observations are consistent with the premise that most people have a deep seated aversion to food impurities, whether they pose a health risk or whether they are simply aesthetically unpleasant. Moreover, it appears that concern over the quality of food is increasing as income and knowledge increase, and this increase is independent of actual risks to health.[78]

Of course, practically speaking, food cannot be totally free of "aesthetic contamination." Lettuce is grown in fields where small animals are found, insects are essential for plant pollination and even healthy animals inevitably have bruises or minor infections. But it does matter to many consumers whether the protein in their food comes from beef, pork or soybeans, and whether food processing plants are clean, even if the final product may not be affected. Thus, some consumers in effect demand regulation of the process to maintain "aesthetic" quality—an objective that may not be met by product inspection alone. So too, manufacturers may support such regulation to maintain consumer confidence in product quality. Clearly the cost of the process-regulation-"banning" approach is sustained by all consumers, regardless of their desire for high aesthetic quality. In direct consequence, prices may rise to the detriment of low income consumers.

As previously noted, the process-regulation-banning approach seems generally most appropriate when potential consequences are severe. But much of food regulation cannot be justified on that ground, since it largely concerns generally nonhazardous sanitation problems rather than dire safety or health hazards.[79] For example, the FDA may seize or destroy brewery grain when rodent or insect contamination is above a threshold level. This is true even though the cooking, filtering, and chemical action of the brewing process guarantees a safe product.[80] All beer drinkers bear the costs, but the more fastidious gain at the expense of others. Consumers who would prefer less-expensive beer in return for somewhat higher but non-dangerous "contamination", are denied that choice. Also some grain is wasted or diverted to nonhuman consumption. The same holds true for meat, and even here the health hazards do not appear severe.[81]

Informational or labeling approaches could be adopted, with government grading used to identify products produced under varying "aesthetic" conditions.[82] One argument against this approach is that the poor or illiterate would be "driven" to consume the lowest grades, and so would suffer. But if prices are indeed lower, and the nutritional and health hazards small or nonexistent, it appears that these groups would gain from a wider range of grades.

Labeling might also be used for foods that must be properly processed by consumers to be safe. This may seem absurd, but at present

[78] Ibid. Two FDA surveys conducted in 1966 and 1972 provide an indication of the direction of concern. In 1966, 82 percent of the respondents said they felt reasonably or definitely sure their food was wholesome, pure and safe to eat. The number for 1972 was 78 percent. For artificial colors the vote for "very safe" decreased from 41 to 15 percent and for preservatives the numbers were 33 percent and 5 percent respectively. (Dr. H. R. Roberts cited by Ibid.)

[79] Ibid.

[80] Ibid.

[81] Ibid.

[82] Ibid.

consumers who buy pork in the United States are frequently exposed to trichinosis with no warning.[83] While pigs are checked for bruises and other defects, there is no continuous inspection of each animal for this potentially serious disease.[84] Apparently consumers are to be protected by informal education over the years. The cost of microbiological inspection for trichinosis would be very significant.[85] But the health hazard is real, and the less educated, or careless may suffer. The rationale for relying on banning to prevent the consumption of generally harmless insect parts while using informal education to protect against trichinosis is unclear.

Some support for food processing regulation may come from a consumer desire "not to know". As biological products most foods will be contaminated to some degree. Yet consumers may prefer to believe that foods are "pure". FDA has recognized the impossibility due to high cost of total purity by setting Defect Action Levels (DAL's) for many foods. These standards reflect popular desires for pure foods as well as the ability of producers to meet standards without large cost increases.[86] The DAL's are not health hazard "thresholds" or guarantees of aesthetically "pure" foods. Instead they are limits below which processing costs rise sharply.[87] For example, dried mushrooms meet the D.A.L.

> ". . . if on the average per 15 grams they contain (a) less than 21 maggots of any size and (b) less than 6 maggots, 2mm. or longer and (c) less than 75 mites and (d) less than 11 percent of decomposed mushrooms.[88]

This does not represent "purity". Yet many consumers may prefer "not to know", and to ignore the sometimes unpleasant reality of food sanitation. One result of concern with "purity" is monitoring of the characteristics of *ingredients* rather than *product* quality and safety.[89]

Concern over ingredient purity rather than product safety can have perverse side effects. D.A.L. standards for fruits and vegetables limit insect infestation. Studies by Dr. Donald Kennedy, present Commissioner of the Food and Drug Administration, indicated that the result was increased insecticide use by farmers and greater insecticide levels in some products.[90]

7. *Conclusions: Specification standards, performance standards, and information provision*

Overall, product performance standards place fewer constraints on technology and impose lower costs than process-oriented specification standards. Compared to standards generally, an informational approach relying on labeling and disclosure allows even greater flexibility and freedom of choice. However, flexibility and low costs may not in all cases be the most important objective. When risks are great or consequences potentially irreversible, certainty may be preferred

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[83] Ibid.
[84] Ibid.
[85] Ibid.
[86] Ibid.
[87] Ibid.
[88] Ibid.
[89] Ibid.
[90] Stanford Observer, Vol. 10, June 1976, cited in Ibid.

which can best be achieved by some form of strictly enforced standard. Performance standards could in that regard be appropriate. Yet in certain situations, such as nuclear safety, the extent of risk may be so great that it is necessary to regulate the process through specification standards. In those areas, the benefits of certainty are judged to weigh possible advantages in cost or flexibility which might be gained from other approaches. Also, where there is a clear public demand (such as sometimes occurs with pure food) or the need to protect a particular group, a course involving strict standards may be justified. These issues of basic regulatory approach, so critical to economic well-being and public welfare, must be determined by Congress.

I. Imposing Taxes and Fees as Incentives for Prevention

Taxes, fees or other payments can be used to close gaps between private and social costs (or benefits) and provide automatic incentives for prevention, avoidance, conservation—in other words, for internalization of external effects. To avoid perverse incentives and the resulting waste and possible inequities it is most important that the tax or other incentive be focused on the activity to be discouraged. More narrowly grounded taxes—as on automotive use of gasoline or on the business use of oil and natural gas—may unduly discourage the taxed activity, imposing unnecessary costs to save fuel which could perhaps be more cheaply saved elsewhere. The issue is similar to that encountered in setting standards, to wit: taxes, like standards and sanctions, must be set so as to encourage achievement of regulatory goals. Ideally taxes or other incentives would be based on some measure of performance, such as the extent of pollution produced or degree of health hazard.

1. The benefits and effects of fee systems

Fee systems have major practical advantages. First, and perhaps most important, when fees are imposed it becomes profitable to reduce the hazard. There will also be clear incentives to innovate and pursue the least costly methods of achieving a particular goal. That will involve consideration of various possibilities, without favoring any particular approach. The result will be that those subject to fees will be induced to make their contributions to reducing the hazard at a minimum cost. All of which is automatic and not dependent on administrative discretion and review.

Fee systems can induce firms and individuals to abate their activities up to the point where costs, including any fee, of further action would not be justified by extra benefits thereby obtained. To abate further would increase costs beyond benefits.[91] The fee itself will be treated just like costs of electricity, labor, and materals. Firms will weigh the fee (which, in effect, is the cost of non-abatement) against the cost of abating the hazard and thus avoiding the fee.

[91] See A. Michael Spence and Martin L. Weitzman, "Regulatory Strategies for Pollution Control," paper presented at a conference on air pollution control, Massachusetts Institute of Technology, December 1976.

Possible abatement activities vary widely, including: installation and maintenance of equipment; modifications in product design, manufacturing process, or materials; or reducing production. All of these control methods impose costs, whether in increased expenses or decreased profits.

The way in which firms are likely to balance these considerations is best illustrated through diagrams and numerical examples. In Figure 1 the level of hazard reduction is measured from left to right along the horizontal axis. The point labeled at the far left of this axis indicates the amount of reduction which would be undertaken in the absence of any fee or incentive system or other regulation; for convenience it is marked as the point of zero abatement. For our purposes, the maximum possible level of reduction is measured as 10 units. Abatement is measured from left to right; conversely hazard is measured from right to left. In this hypothetical situation when complete or 100% abatement has been achieved, 10 units of the hazard have been removed, thus reducing it to zero. This point is shown at the right of the horizontal axis. Similarly, 50 percent abatement—the point halfway between these two points—means that 5 units of the hazard have been removed with an equal number remaining.

The upward sloping curve labeled AC in Figure 1 represents the costs of hazard reduction. The height of the curve at each level of abatement indicates the cost of obtaining the last bit of reduction (or the "incremental cost of abatement") which is hypothesized ultimately to rise sharply with the degree of hazard reduction. According to the curve AC the cost of the first unit of abatement (that is, reducing the hazard level from 10 to 9) is $20,000 per month; and the same expense is incurred for the second unit of reduction. However beyond that, the extra cost of further reducing the hazard rises, as the firm must resort to increasingly costly means of prevention. This is shown in Figure 1, where the additional cost of moving from 40 to 50 percent abatement is between $30,000 and $35,000 per month, while the extra cost of moving from 70 to 80 percent abatement is between $45,000 and $50,000 per month. Conversely, the total cost of reducing the hazard level from 10 to 8 will be the cost of the first unit ($20,000) plus the added cost of the second unit ($20,000) for a total of $40,000 per month to achieve a 20 percent reduction. More generally, the total cost of any degree of hazard reduction will be the area under the AC curve, out to that level of abatement. Thus, the total cost of attaining 50 percent abatement is given by the striped area in Figure 1.

FIGURE 1

HYPOTHETICAL COSTS OF HAZARD REDUCTION

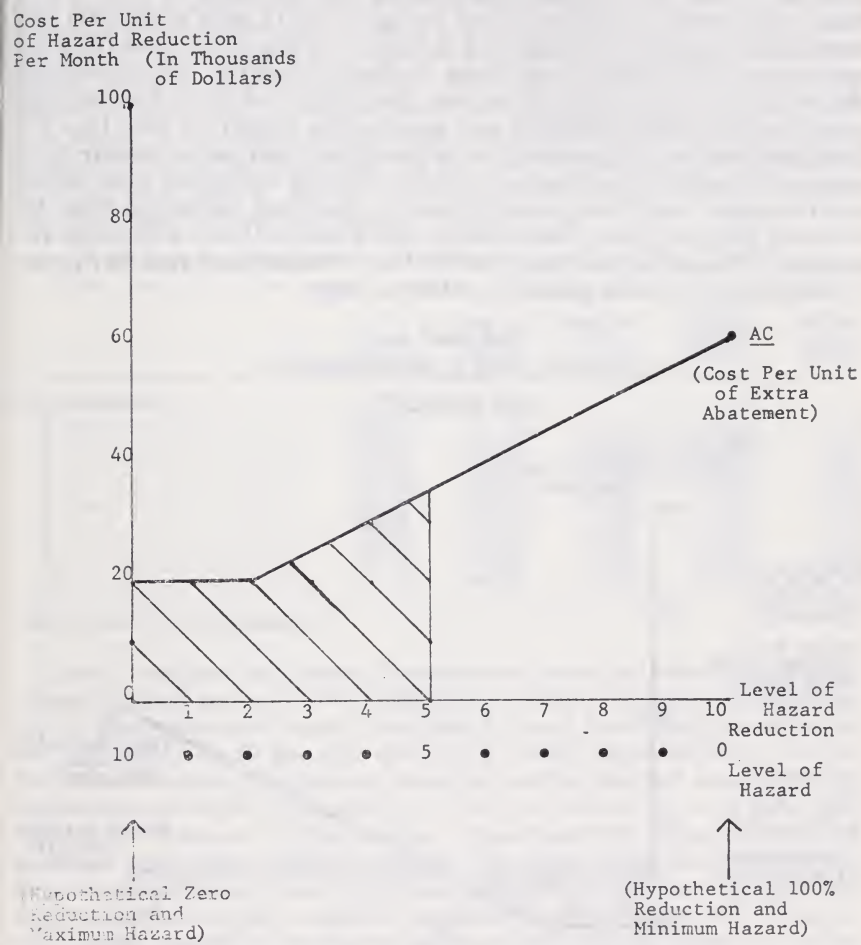

Figure 2 reproduces Figure 1 but introduces an assumed hazard fee of $30,000 per unit hazard per month. Under this fee, if there is no abatement, the firm must pay $30,000 for each of the 10 units of hazard, as shown by line F in Figure 2. Thus, total fee cost with zero abatement is shown by the striped rectangular area in Figure 2. Thus each unit of abatement will save the firm $30,000 per month, which is in

effect a gross cost saving from reduced fees or taxes. For example, the total saving in fees for 20 percent abatement (reduction of hazard by 2 units) would be $60,000 per month. But that, of course, does not take account of the incremental costs, which are indicated by curve AC. Each additional unit of reduction brings an extra gain of $30,000 per month, measured by the height of fee line F in Figure 2. Thus the firm can expand its total gain from hazard reduction by increasing abatement so long as the extra cost (the height of AC) does not exceed the fee saving ($30,000 per month, the height of free line F) from that action. Therefore the company will best serve its own economic interests by increasing abatement until the point that added control costs would be greater than the resulting saving in fees. In terms of Figure 2, the profit motive would assure that a 40 percent reduction in hazard would be achieved. The cross-hatched area in Figure 2 indicates the profits gained by this strategy.

FIGURE 2

HYPOTHETICAL COSTS OF HAZARD REDUCTION WITH HAZARD FEES

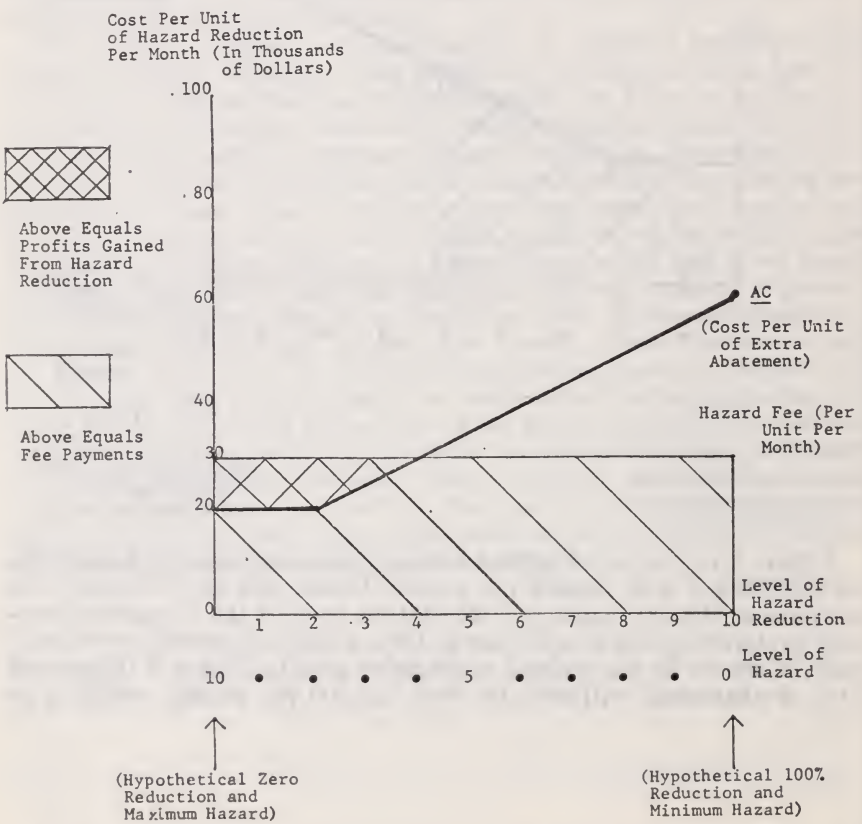

Table 5–4 shows the profit position of the firm at various levels of abatement and illustrates, as does Figure 2, why the firm will increase abatement until the incremental cost for the last bit of abatement just equals the fee. Both the first and second unit of abatement cost $20,-

000 but yield a fee saving of $30,000, for a net contribution to profit of $10,000. Up to 40 percent abatement, further expenditures more than justify their cost. The 4th unit of abatement, as shown in Table 5–4 and Figure 2, adds approximate costs of $27,500 but contributes revenues of somewhat more, and so is worth undertaking. However, moving beyond that point would involve higher cost and without commensurate yield in spared fees, thus decreasing the total return. Cutting hazard from 10 to 6 thus adds $30,000 per month to profit. Thus, higher fees would be needed to induce higher levels of control. For example, to attain 70 percent reduction, the fee would have to be about $45,000. At any lower level of fee the firm would not find it profitable to incur the extra cost to reach that level of control.

TABLE 5–4. HYPOTHETICAL EFFECTS OF HAZARD REDUCTION ON COSTS, AND PROFITS

	Total fee payment	Total fee saving from reduction	Incremental reduction cost [1]	Extra to profit from last unit reduction	Total profit gain from reduction
Hazard reduction level:					
0	300,000	0			0
1	270,000	30,000	20,000	10,000	10,000
2	240,000	60,000	20,000	10,000	20,000
3	210,000	90,000	22,500	7,500	27,500
4	180,000	120,000	27,500	2,500	30,000
5	150,000	150,000	32,500	−2,500	27,500
6	120,000	180,000	37,500	−7,500	20,000
7	90,000	210,000	42,500	−12,500	7,500
8	60,000	240,000	47,500	−17,500	−10,000
9	30,000	270,000	52,500	−22,500	−32,500
10	0	300,000	57,500	−27,500	−60,000

[1] Cost of last full unit of hazard reduction.

Clearly under a fee system if abatement costs are uncertain, the ultimate level of reduction will also be uncertain. Suppose that it is believed that abatement costs look like AC and that the desired target or "standard" is 40 percent control. In that hypothetical, a fee of $30,000 will be set. If estimates proved accurate, the goal would be automatically achieved. However, if the projection is mistaken and abatement costs are higher, then a lower level of reduction will be achieved since that would represent the most profitable course for a firm to take. On the other hand costs could be lower than expected and more abatement than considered necessary would be obtained. That result might suggest downward adjustment of fees in order to achieve the desired level. Some discretion insofar as fee adjustment thus may be necessary. However, that is also the case with a standards-enforcement approach. In other words, if control costs prove to be higher than expected, enforcement efforts or sanctions will have to be increased or strengthened to induce a desired level of control, since higher costs of compliance will almost certainly foster business resistance.

It is clear that fees become more attractive as costs are of increasing concern and in situations where the consequences of some risk of higher hazard or external effect are not disastrous.[92] If achieving a certain goal is considered very important to the private or public welfare, it may not be desirable to allow that achievement to depend on abate-

[92] For an explication of this argument in the context of environmental pollution see Larry Ruff, Federal Environmental Regulation op. cit. in Appendix to this volume.

ment costs, which tend to be uncertain. Oher approaches—including saleable rights, and quantitative standards with strict enforcement [93]—should be considered if certainty is preferred. That is, if costs are moderate and specific goals are both known and of real importance, the fee approach loses appeal, because the level of abatement or remaining hazard is uncertain.[94] With quantitative limitations as may be imposed by strictly enforced standards, the level of hazard or other activity can be relatively certain. The total costs of compliance may be uncertain and could be very large indeed.

To be efficient taxes or fees should be paid by all who contribute to the hazard, so that the incentive to act will be widespread. But that could conflict with equity considerations; for example, placing high taxes on those without viable alternatives may impose a very onerous burden, which may not even contribute to a solution of the problem. Lacking realistic alternatives, circumstances will compel some to simply pay the tax and continue the activity.

That possibility might appear to justify a differential fee structure, based on a relative consideration of burdens and the ability to respond. But to do so would first require a statutory delineation of classes, and an elaborate regulatory apparatus for implementation. That application would involve determinations of who belonged in each class, and whether exceptions or qualifications in specific cases should be made. Firms will thus be encouraged to seek the most favorable classification or argue for possible exceptions or other treatment. Aside from the likely delays, that process necessarily weakens the automatic feature of the approach, which is perhaps its primary attraction. Further, firms in favored classes will have less motivation to innovate and reduce the problem because they are subject to lower fees. Finally, the adoption of possibly less socially preferred alternatives, which qualified them for favored treatment, could be encouraged. For example, if small plants were classed in a low fee category, firms would be clearly prompted toward construction on that scale—even though the course might be more costly for society and less effective in achieving a particular goal. In some cases equity may dictate such differential treatment, but the potential costs in efficiency may be substantial.

One desirable feature of an incentive approach is that with uniform fees and enforcement it can, in principle, achieve any degree of "abatement" at minimum cost, because incremental abatement costs will be the same for all users. To achieve that same objective by a standards-enforcement approach requires extensive knowledge of production processes throughout the economy and a correspondingly detailed set of classifications and enforcement criteria. Thus, standards systems will inevitably impose higher cost for given levels of abatement than uniform tax or fee systems.

2. The New York City nicotine tax: An example of an incentive system

At present, taxes or fees are not widely used to internalize external effects or hazards. One example is New York City's "nicotine and tar"

[93] Ibid. Also see Spence and Weitzman, op. cit., pp. 14–20.

[94] Standard enforcement with small penalties will not necessarily make remaining hazards any more certain than a fee or tax.

tax on cigarettes.[95] In July, 1971 additional taxes were placed on cigarettes as follows:

1. One and one-half cents for each ten cigarettes where either their tar content exceeds seventeen milligrams per cigarette or their nicotine content exceeds one and one-tenth milligrams per cigarette;
2. Two cents for each ten cigarettes where their tar content exceeds seventeen milligrams per cigarette and their nicotine content exceeds one and one-tenth milligrams per cigarette.[96]

Considering that the previous base local tax rate was two cents per ten cigarettes, this local ordinance represents a substantial tax increase. The law's objective, as inferred from debate on the state enabling act, was to increase the cost of smoking in direct relationship to the degree of health hazard presented.[97] Although the exact nature of the external effect to be corrected is unclear, financial and other externalities due to illness could justify the tax. From the City's action, it can be assumed that disclosure of health hazards to consumers was not considered adequately effective; as a result of Federal action, clear warnings already appeared on cigarette packages. Something more was deemed necessary to discourage consumption of high tar and nicotine cigarettes. Also, perhaps the tax would make consumers more conscious of the risks. The law stressed that it is "intended that the ultimate incidence of a liability for the tax shall be upon the consumer",[98] and required differentiated retail prices reflecting the taxes as well as notice to consumers of the taxes paid.[99] The actual price differential required were higher, ranging up to five cents for vending machines sales.

Since in financial terms so little cost is involved, only slight effects might be expected. But available evidence suggests a contrary result. In his study, William Drayton indicates that there may have been substantial shifts to exempt brands of about twelve to thirteen percent of total cigarette sales.[1] This estimate is based on a comparison of actual New York brand selections following the tax with nationwide average prior to the law's adoption. The impact may be overstated, since there may be other explanations for the shift: perhaps responding to more general trends, New Yorkers in increasing numbers might have preferred the low-tar nicotine cigarettes regardless of the tax; or possibly those who favored the more heavily taxed brands obtained them elsewhere.[2] Nevertheless, Drayton believes the evidence shows some movement in the desired direction. It is unclear whether that shift was prompted by the incentive, as distinguished from the informational aspects, of the tax.[3] Studies of these effects could prove useful for future policy making.

3. Incentive mechanism to improve worker safety and health: Uses and limitations

Tax proposals to achieve regulatory objectives have been made in other areas. Worker safety provides an example. If information or other problems keep producers and employers from fully taking ac-

[95] This discussion draws on Economic Disincentives, op. cit., pp. 92–98.
[96] Local law 1971, No. 34, June 30, 1971, codified as section D 46–2.0a.3 and section 46–8.0 Administrative Code, the City of New York, cited in Economic Disincentives, op. cit., p. 92.
[97] Ibid., p. 93.
[98] Section D 46–2.0a.3, cited in ibid.
[99] Ibid., p. 94.
[1] 81 Yale Law Journal, cited in ibid., pp. 96–98.
[2] Ibid.
[3] Ibid., p. 98.

count of hazards, a penalty on product or work related injuries, or even conceivably on health problems or hazards, could be of assistance. Ideally, the penalty would equal the difference between the expected total cost of a consequence, such as injury or disease, and the portion borne by a producer or employer in lower prices or higher wages, turnover, etc. Because the welfare of workers in each workplace is important, there is no presumption that the tax or penalty be uniform. Taxes might be placed on products which were hazardous in use or on the use of materials hazardous to workers.

The tax would have the desired incentive effect of raising the relative prices of products and processes causing damages. Thus the marketplace would then discourage consumption of goods, or the use of processes, which posed costly hazards. Most important, taxes would prompt reduction of damages, in contrast to present methods of attempting to meet standards independently of real effects on worker or consumer welfare. There would also be an incentive to properly maintain and operate equipment once installed, which is something that the standards approach does not address. That lack has been a major failing of the automobile emission and water pollution control programs. Finally, firms would be motivated to reduce incidents by adopting the least costly methods, whether these involved capital investment, process or product changes, or worker or consumer education and training.

Penalties may be more appropriate for job and product safety than for health. An accident or injury is a definite event, typically involving a specific product or workplace. In that sense, penalties are less appropriate for health problems. Many health problems appear only with the passage of time; workers may have switched jobs, and consumers used a wide range of possible injurious products; and determining causation may be very difficult. In those situations, who should be penalized? In addition, the penalty may not be a useful incentive to reduce hazard and damage. If workers change employers and consumers shift suppliers, preventive activities by any one firm might have little effect on the overall safety or the overall health of its customers and employees. For these reasons standards are superior to incentives for dealing with health problems. As discussed above, if there is uncertainty about abatement costs, penalties or fees can leave hazard levels uncertain. For some hazards—e.g., carcinogens—this may be considered intolerable. But a tax on levels of exposure—such as the amount of lead in air—would at least give firms incentives to move in the proper direction. Although penalties on most disease incidents do not appear appropriate, disincentives to expose workers or consumers to hazards could supplement standards, and provide continuing incentives for technical change and safe product development.

High penalties could significantly reduce on-the-job injuries. Studies by R. S. Smith suggest that fines of about $2,000 per incident might reduce injuries by 9 to 13 percent,[4] which may indicate that job safety efforts have reached the point where many injuries cost more than $2,000 to eliminate. It is arguable whether the elimination of more injuries is worth the additional cost. For example, in 1970 typical compensable injuries in manufacturing entailed less

[4] R. S. Smith, op. cit., p. 80.

than $150 in medical expenses and $375 in lost wages for a total potential dollar cost to employees of $525.[5] Workmen's compensation generally covers only about half of lost wages.[6] Smith estimates that the "tax" required to internalize the probable costs to workers would, for a plant of 500 workers, range from $200 to $900 per injury for temporarily disability cases.[7] Of course, pain and suffering costs could raise the appropriate tax to much higher levels.[8] But Smith concludes that such fines, amounting to about 1 percent of payrolls would reduce injury rates by between 2 and 10 percent.[9] Penalties must be based on individual and plant experiences or risks. Otherwise the inventive effects will be perhaps misdirected.

Much of the support for standards over incentives may derive from moral principles: conceptually, a standard forbids or requires, while a tax or penalty appears to allow and confer legitimacy, so long as payment is made. With human pain and life at stake, this may appear repugnant. However, the success of standards depends on the effectiveness of enforcement, and thus is too often adversely affected by regulated firms' use of legal tactics to delay imposition of sanctions. Such delay would not occur with incentives.

Penalties and other incentives will also induce firms to use the lowest cost methods of "prevention." But this may have its own undesired side effects. The least cost method of compliance may be periodic physicals coupled with dismissal or transfer of "accident-prone" or otherwise susceptible workers.[10] The cost-effective approach of denying employment to some classes of workers may conflict with other social policies. But if the employment of the "accident prone" results in much greater hazards, preserving "equal opportunity" and "job security" may be very expensive indeed.

Furthermore, unenforced or poorly enforced standards may be worse than taxes or penalties. Taxes on exposure or observable incidents at least provide some incentives. Standards could be objectives for union bargaining activities and private efforts to provide information, but incentives will be too low without enforcement. If workers and consumers incorrectly believe that standards provide protection, they may take insufficient precautions or demand less wage and price compensation for hazards. As a result, incentives will be too low. These effects will be most severe for diseases with long latency periods.

These considerations indicate that incentive mechanisms are clearly not a panacea for all problems worthy of government attention. In addition, a major determinant of the success of such approach is the way in which it is designed. The problems of properly designing incentive systems are well illustrated by a discussion of "user charges" for public facilities.

J. User Charges and Incentives

Charges for the use of public facilities can lower use below what it otherwise would be, and can help allocate such facilities to the higher

[5] Ibid., p. 81.
[6] Ibid.
[7] Ibid., p. 82.
[8] Ibid.
[9] Ibid.
[10] These arguments are taken from N. S. Ashford, "Crisis in the Workplace," op. cit., p. 334.

value uses. By doing so, charges can reduce emissions, pollution or other undesirable social effects and lower the cost of achieving social goals. The environment is one such "public facility" subject to "use and overuse" by polluters. The capacity of other public facilities, such as airports and highways, can also be overused. During rush hours the addition of extra vehicles to the road will increase delays for other traffic. In choosing whether to use a road during the peak hours, a driver will, in a sense, consider his personal benefits and costs, but will probably ignore the delaying effect on other vehicles.[11] Yet even small delays imposed on a sufficient number of other vehicles can cause substantial external costs and excessive highway congestion.

1. Charges to cover facility cost versus incentives for efficiency

A primary objective of user charges is to help defray the cost of construction and maintenance of public facilities. Charges may be based on frequency of use, or a flat fee may be set for access without regard to use. In general, the law allows fees to be charged provided that they are not excessive relative to actual costs.[12] That reduces the effectiveness of charges in internalizing external effects. Certainly flat fees cannot effectively take account of those external costs which vary with use. It is equally true that basing user charges on the cost of facility construction necessarily excludes consideration of either the social values of the facilities or consequential external damages. Actual user charges would be either higher or lower than the total cost including any incremental social damage caused by an activity.[13] Thus, for facilities such as airports and highways, which are subject to heavy peak-load demands, flat user charges cannot correctly take account of the full social costs of use. These costs will vary according to the time and circumstance of the use. To efficiently ration facility use, charges must recognize at least some of these differences.[14]

In some cases legal obstacles may prevent the use of charges to internalize external effects. For example, by Federal statute, airports must set user charges "which will make the airport as self-sustaining as possible," in order to qualify for Department of Transportation approval of airport development projects.[15] Federal laws also prohibit EPA approval of sewage treatment construction grants unless the municipality has adopted or agrees to adopt user charges which require each receiver of service to pay a proportional share of the costs

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[11] Suppose that the addition of an extra vehicle to the highway imposes one second delays on 10,000 other vehicles. The total delay imposed is 10,000 vehicle seconds. If the average vehicle has 1.5 riders then the delay would be 15,000 person seconds. At a $4.00 per hour value of time this would be worth about $16.33. Since driving on congested roads is aggravating the perceived value to drivers may be higher. The crowding will make accidents more likely and the resulting delay will increase fuel consumption and vehicle wear and tear. The total external cost of rush hour highway use may be much higher than the direct time costs imposed on driver and passengers.

[12] William A. Irwin and Richard A. Liroff, "Economic Disincentives for Pollution Control: Legal, Political, and Administrative Dimensions," Office of Research and Development, U.S. Environmental Protection Agency, Washington, D.C., 1974, p. 7 [hereafter cited as Economic Disincentives].

[13] If, by chance, the efficient amount of abatement actions had been taken, i.e., the amount at which the long run incremental cost of reducing damages just equals the incremental benefit from damage reduction, a user charge equal to this incremental cost of abatement could be efficient. But this abstracts from "peakload" problems. The actual efficiency of charges pegged at some portion of average facilities cost will vary depending on the particular circumstances.

[14] This does not mean that ideal charges would vary to account for all differences in costs. Imposing variable pricing will have its own costs including rate design, metering, collection, and enforcement.

[15] 49 U.S.C. ¶ 1718(8).

of operation and maintenance, including replacement.[16] These costs may not be related to pollution damage.

2. Incentives for efficient use of airports; user charges, subsidies, regulation, and alternatives

A system of charges for airport use, based on the actual costs of building and operating that facility, can lead to gross inefficiencies as well as apparent inequity. A plane landing at a busy time can inflict substantial costs on others by delaying their arrival. User charges based on airport costs do not reflect these very real external social costs. Certainly there is no incentive for operators of small planes to avoid peak hours, even when their use can significantly delay the arrival of commercial flights carrying hundreds of passengers. Such fees also do not encourage small planes to utilize less densely used but perhaps more distant airports. Instead the fee structure prompts use, and thus increases delay costs on travelers and the risk of accidents, by adding to congestion and complicating the tasks of air traffic controllers. In short, the flying situation is far more risky than it need be. Because such charges are an incentive for use, the resulting congestion heightens the perceived "need" for airports, thereby raising Federal subsidy costs and escalating potential environmental damages from increased airport construction.

3. The effects of improper airport pricing: Congestion costs, increased subsidy burden, and exaggerated "needs" for costly airport capacity

The costs of incorrect pricing can be very large. For example, a RAND Corporation study found that the full costs, including delays imposed on other travelers, of an arrival during Kennedy airport's peak hour of 4 to 5 p.m. were over $2,000 for each air carrier commercial airline arrival and $1,800 per general aviation arrival.[17] For La Guardia airport, the respective costs were approximately $960 and $520.[18] An analysis of delays at Washington National Airport in 1967 estimated that the increased delay imposed on others by an extra carrier operation was 14.3 minutes imposed on carriers and 7.3 minutes on general aviation. While the average air carrier landing fee was $10, at peak time the incremental delay costs were up to $139.[19] When the airport was operating close to capacity, increasing general aviation movements by one per hour was estimated to reduce air carrier movements by 0.8 per hour, yet the landing fees paid by the smaller planes were less than 1/5th of the fees paid by larger aircraft.[20] Landing fees, typically uniform over the day, are much below the real social costs of airport use at peak hours. In 1971 the landing charges per thousand pounds of gross aircraft weight (for air carriers) were $.73 at Chicago's O'Hare, $.09 at Kansas City, $.29 at Los Angeles, $.59 at Seattle,

[16] 33 U.S.C. ¶ 1284(b), cited in Irwin and Liroff, "Economic Disincentives," op. cit., p. 7.
[17] A. Carlin and R. E. Park, "The Efficient Use of Airport Runway Capacity in a Time of Scarcity," Santa Monica, California: The RAND Corporation, Memorandum RM-5817-PA, 1969, exp. pp. 3-12.
[18] Ibid.
[19] J. V. Yance, "Pricing To Reduce Airport Congestion," Highway Research Record (296), 1969, pp. 1-4, cited in Eckert, "Airports and Congestion," op. cit. p. 24.
[20] J. V. Yance, "Movement Time as a Cost in Airport Operations," Journal of Transport Economics and Policy, vol. III, January 1969, pp. 28-36, cited in Eckert, "Airports and Congestion," op. cit. p. 24.

$.30 at JFK International and $1.03 at La Guardia.[21] For a 707 jet the landing fees were $75 at JFK and $258 at La Guardia.[22] While these airport fees may approximate social costs at normal times, they are much too low at the peak hours which travelers prefer.

Fees are also very low relative to the total flight cost, thus airlines are not encouraged to shift flights away from peak hours. In 1972 the out-of-pocket cost of flying a 707 jet from Los Angeles to New York was about $5,500, while the JFK landing fee was $75, or about 1.3 percent of the total.[23] By contrast, the social cost (including delays imposed on others) of a peak period air carrier landing at JFK was over 36 percent of total cost. Thus, the social costs of peak-time landings are sufficiently great to have a significant effect on scheduling were they reflected in landing fees. Also if those costs were reflected in fares, traffic would shift, as travelers selected less expensive departure times. As it is now, that is usually not a consideration in determining travel plans.

General aviation flights very significantly increase congestion problems by contributing substantial amounts of traffic. Such traffic amounted to 39 percent of all operations at La Guardia in 1968. Outside of New York, general aviation fees are very low (rarely over $15), and many airports levy no charge at all.[24] A good portion of these flights could be shifted to other times or other airports without major costs.[25]

Failure to charge delay or congestion-related landing fees is not only inefficient, but are also questionable as a matter of equity: travelers on commercial flights and the general taxpayer must subsidize the general aviation flyer. Furthermore, general aviation flyers often gain only slightly from using congested public airports, rather than sometimes less conveniently located private facilities. Ross Eckert, an aviation expert at the University of Southern California, makes the essential point well:

"... a cab from Palwaukee [a private airport outside of the city] to the northwest part of Chicago costs $7.50 more than a cab from O'Hare. If the time in the O'Hare stack is no greater than the extra time traveling from Palwaukee, the private flyer frequently lands at O'Hare and pays the $2.50 fee (single engine plane) rather than going to Palwaukee (where he can land free if he buys gas). Thus he imposes congestion costs on carrier flights of as much as $1,000 in order to save taxi fare. In addition, to relieve congestion at peak hours, extra capacity has been provided at O'Hare whose cost is well over $100 per flight removed. These are large prices to pay to save the private flyer or air taxi passenger $5.00 and a few moments time.[26]

Therefore, allowing such "equal access" at present landing fees causes a substantial transfer from air carriers and their passengers to

[21] Peak-hour operations at O'Hare, Kennedy International, Washington National and La Guardia airports are affected by quotas administered by FAA's Airport Reservation Office, so use of the facilities is not on a simple "first-come, first-served" basis.
[22] Ross Eckert, op. cit., p. 21.
[23] Ibid.
[24] Eckert, "Airports and Congestion," op. cit., p. 21.
[25] Eckert, "Airports and Congestion," op. cit., pp. 30–31. Some general aviation flights, including some trips of company executives, are undoubtedly of very high commercial value. Those involved would be willing to pay substantial amounts rather than be delayed or travel to a less well-situated airport.
[26] Eckert, "Airports and Congestion," op. cit., pp. 24–25. Some of the general aviation flyers may place very high values on the convenience of using O'Hare. They will include some busy corporate executives, others on tight time schedules, some individuals to whom surface travel is particularly unpleasant or expensive, and flyers who enjoy using a large busy airport, or in the limit, actually enjoy waiting in the stack.

general aviation flyers. It is also clear that low landing fees for general aviation flights decrease the demand for construction of privately owned airports, which could relieve congestion at public facilities.

In addition, Federal subsidy for airport construction lowers the amount which must be recovered in landing fees, and so exacerbates both overall congestion and the misallocation of general aviation flights to congested public airports. Even if a public airport has substantial "excess" capacity, so that congestion is not a significant problem, the excessively high demand for service by general aviation will inflate the observed "need" for public airport capacity.[27] These "needs" are then treated as amounts of capacity which public subsidy should be designed to assure. But such "needs" should not be met at *any* cost. The cost to society of small decreases in air travel, or in shifting some air travelers to slightly less preferred times are not always significant; also substantial evidence demonstrates that travelers are sensitive to fares.[28] Shifting passengers from peak hours would mean more airport capacity, lower resource costs to society, decreased subsidy burden on the general taxpayer, less environmental damage from airport construction, greater safety, and diminished noise at peak travel hours.

Several alternatives could alleviate congestion problems. An obvious alternative is greater airport capacity, a course that has been encouraged and funded by the Federal Aviation Administration. But that is very expensive, and can cause substantial noise and pollution problems. In 1969 offshore airports at a cost of over $6 billion each were proposed to lessen noise and pollution problems in New York and Los Angeles.[29] One problem is that capacity "needs", which are a major justification for that expense, have been based on FAA standards as to acceptable delays at peak periods. This means that airport capacity is in part adjusted according to the demands of peak period travelers alone. The costs of the extra capacity, necessary only at peak times, are sustained by Federal and local governments as well as non-peak users who do not substantially benefit from that extra capacity. Further, the delay standard is not based on a comparison of the costs of congestion and the investment and other costs of increased capacity.[30] As with pollution standards, and standards for flood protection, it is important to consider potential damages relative to control costs when setting standards.

4. Non-price methods for dealing with airport congestion

An obvious way to handle airport congestion is to construct larger airport facilities. Several other alternatives have been considered. The FAA sets quotas on hourly operations at four high-density airports,

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[27] FAA forecasts of aviation activity are usually based on simple extrapolations from past peaks and generally tend to overstate likely growth in the demand for airport services.

[28] See Theodore E. Keeler, op. cit., in Appendix to this volume.

[29] U.S. Congress, Senate Committee on Commerce, Subcommittee on Aviation, Hearings on Airport/Airways Development, 91st Congress, 1st session, June 1969, pt. 1, p. 165, cited in Eckert, "Airports and Congestion," op. cit.

[30] A valid cost comparison would be complex, and would depend on assumptions made about the value peak-hour travelers place on being delayed, the economic and environmental costs of capacity expansion, and on possible safety effects of increased congestion and all of these factors will vary from airport to airport. For example, the costs of capacity expansion are generally much greater for airports in congested urban areas than in outlying areas. An economically efficient "delay standard" would, other things being equal, call for more delay and less extra capacity in the urban areas. This could be offset if travelers to and from the urban airports found delay much more costly than flyers to the "outlying" areas.

including Kennedy, La Guardia, O'Hare and Washington National.[31] A major purpose of the quotas—which involve separate classifications for air carrier, air taxis, and general aviation—is to restrict general aviation operations.[32] Actual landing slots are allocated by bargaining among airlines in "scheduling conferences." [33] However, although general aviation and air taxi flights may use vacant air carrier slots, the reverse is not true. This might be justified by an "equity" motivation to reserve at least some peak capacity for these users. All the same, the previously discussed evidence indicates that this use may be inefficient.

Direct regulation of airport use is still another option. The FAA controls Washington National and Dulles International Airports and has tried to shift flights in order to lessen congestion at the former and promote use of the latter. Flights of more than 650 miles from Washington are required to use Dulles. The policy has not been wholly successful. Because of National's more convenient location, airlines have scheduled flights from National to the West Coast with intermediate stops in order to meet the regulations.[34] The problem is that the policy did not directly address the problem: excessive demand for scarce capacity at National.

In the past, Civil Aeronautics Board policies have aggravated problems of airport congestion. Fixed fares and entry prohibitions induced carriers to compete by offering additional flights, particularly at the more popular peak hours. The CAB, which has no statutory authority to restrict scheduling, has on occasion approved carrier agreements to reduce capacity. Such CAB sanctioned agreements are exempt from the anti-trust laws. Capacity agreements could lower peak-hour demands for airport capacity and moderate both congestion and the "need" for extra airport capacity. In order to achieve this potential the agreements would have to include all carriers. Otherwise, congestion might not be reduced and those outside the agreement might have strong incentives to offer additional flights at peak hours. However the CAB lacks authority to compel participation in such agreements.[35] Moreover, capacity agreements are blunt instruments for dealing with congestion and excessive demands for airport capacity: they do not directly focus on the primary problem of excess demand at certain peak hours, and further may entail risks of substantial anticompetitive effects.

The CAB has also considered requiring that new route certificates stipulate the use of satellite airports rather than more congested central airports. Some new certificates did embody such restrictions, but at present the policy, though "active," is not effective. Carriers have not been enthusiastic about routes with such restrictions, in part because CAB fare policies have in the past prevented discounts on flights to less desirable airports. This may change as several carriers have proposed that they provide discount service out of Chicago's Midway Airport [36] and discount fares are now encouraged by the CAB. All the

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[31] Newark was also included in the program, but its quotas have been suspended. The quotas are for Instrument Flight Rules (IFR) operation under which air traffic controllers guide approaches and landings. All air carriers restrict flights to IFR rules.
[32] See Eckert, "Airports and Congestion," op. cit., pp. 34–35.
[33] Ibid., pp. 34–35.
[34] Ibid., p. 37.
[35] See Theodore E. Keeler, op. cit.
[36] The carriers include Air Southwest, and Chicago Air Lines. Source: Telephone conversation with James Kollstadt, CAB, Mar. 11, 1977.

same, such shifts would have a slow effect on congestion, since the policy has no direct effect on flights now certificated to serve congested airports.[37]

5. Price of economic incentive methods for dealing with airport congestion

Pricing mechanisms are an alternative to directly rationing use of facilities and do provide guidance on the areas where expansion is needed. Higher landing fees, based on estimated congestion costs, could be imposed at peak hours. Imposing even moderate fees would significantly reduce congestion by decreasing low value general aviation operations. For example, following the 1968 increase from $5 to $25 of the minimum small plane landing fee at New York airports, general aviation decreased by 40% during peak hours.[38] As previously noted, estimates of the full delay costs of operations at some large, congested airports far exceed the sum of $25. Yet imposing fees equal to full costs might not be politically acceptable. But, as the New York example suggests, making peak flights bear even a portion of the costs could have a substantial effect. Whatever pricing scheme is adopted vary by time of day, day of the week, and season.

For efficiency, fees should be designed to ration capacity and reduce congestion, not simply to cover airport costs. Setting fees at exactly efficient levels is impossible, thus—instead of trying for ideal results—fees might be set on a provisional basis and adjusted until delays reached levels considered safe and manageable. Congestion fees should be basically the same for all categories of flights at any given time.[39] Thus, all users would have to bear at least part of the costs; with the result that of their actions, lower valued flights would shift to off-peak hours, and scheduling competition at peak periods would be moderated.

Rational allocation could also be achieved by using saleable or exchangable landing rights. Airport authorities or regulatory agencies could determine allowable rates of operation at various peak congestion times. Once set, those operation levels could apply for some period of time. The rights could be sold by government to the highest bidder. To be sure, giving away the rights could lessen carrier resistance to raising the cost of operations. But, that may be objectionable as the users, and not the public, would capture the value of scarce airport resources. Selling the rights at auction would incidentally provide useful information about the value of operations at various times, the need for additional airport capacity, and on the appropriateness of the landing allocations.[40]

The rights approach has desirable flexibility: a carrier wanting to enter or expand service can "buy in," and face the same costs as any other firm.[41] Rights would thus be allocated to their highest value uses.[42] Of course, rights—just as airport capacity—should be subject to revision as demand for travel significantly changes.

Under either incentive approach, whether user charges or sale of rights, fares would come to vary over time, particularly with more

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[37] Ross Eckert, "Airports and Congestion," op. cit., p. 38.
[38] Ibid.
[39] There might be adjustments for differing approach and taxi times.
[40] This is analogous to the role of the prices of pollution rights in conveying information about the costs of abatement.
[41] Even if rights were initially given away, carriers choosing to continue to use their "free" rights would forego what others were willing to pay for those rights.
[42] Where a few air carriers dominated service to an airport bidding for rights might not be fully competitive. In such cases the authorities might set minimum prices for rights at some times of the day.

flexible CAB pricing regulation. Fares would reflect the scarcity value of airport resources, and some passengers would be encouraged to shift travel plans to less congested times. Even if fares did not vary substantially, rational landing fees would discourage excessive scheduling competition at peak hours and encourage carriers to spread flights over the day. On the other hand, merely requiring or allowing air carriers to vary fares with airport congestion would not be an efficient solution, for it would provide no incentive for general aviation flyers to shift away from the peak hours or overused facilities.

Administrative problems include setting and collecting fees for various periods. In addition, lease agreements between airlines and airports often set formulas for landing charges.[43] Rational fees could raise total payments. Airport revenues might rise significantly. Revenues could be used to expand capacity, to build satellite airports, to improve air traffic control, or to compensate those damaged by airport construction or operation.

General aviation flyers will certainly be affected by higher fees. For some time, these users have enjoyed substantial subsidy at the expense of air carriers, their passengers and the general taxpayer. During the early 1970's the total subsidy to general aviation was estimated at well over $600 million annually, including more than $35 million annual congestion costs imposed on others.[44] According to a leading authority ". . . it will commonly be the case that the *public at large contributes more toward the total cost of safely operating a light aircraft than the owner does himself.*" [45]

One partial solution would be to continue to arbitrarily allow some general aviation use at low fees or to assign some slots to general aviation as is now done under FAA quotas at a few congested airports.

In summary, in order for user charges to avert undue social costs, correctly guide resource allocation and serve equity, they must be designed to impose costs in relationship to all of the consequences of that use. Fees based on average construction or operating costs may have little or no relation to real social costs. And, as in the case of airports, they may provide perverse incentives, particularly when combined with subsidies.

K. Alternative Methods for Dealing With Environmental Pollution

1. The absence of market forces and the fundamental problems of environmental regulation

The basic question in this as in other areas of regulatory controls is: how can individuals and firms be induced to appropriately and efficiently take into account the consequences of their actions? However

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[43] Ross Eckert, op. cit.

[44] Jeremy J. Warford, "Subsidies to General Aviation, in the Economics of Federal Subsidy Programs," op. cit., p. 853. The total estimated subsidy consisted of $445 million in Federal airways system costs, $30 million in Federal subsidies for airport development, $130 million in state and local subsidies to general aviation airports and $35 million in congestion costs, for a total of $640 million annually. (Ibid.). The congestion cost figure assumes no change in annual cost from an estimate for 1968. Though commercial flyers benefit from lessened congestion due to subsidies to special general aviation airports, it is clear that the balance of subsidy lies with general aviation.

[45] Ibid., p. 854. Emphasis in original.

environmental problems may be more fundamental, because without government action markets for environmental resources do not exist. Product and worker safety regulation operate in the context of existing product and labor markets. Although problems may often be handled in highly imperfect ways, market forces such as wage and price adjustments, effects on producer good will, and employee turnover can provide at least qualitatively correct incentives. Markets may underproduce information about safety and health, but they do provide some knowledge. Liability suits, collective bargaining, insurance, and other institutions also afford incentives. However inadequate, they are at least present, and the task of regulation is to strengthen and focus such existing forces.

By contrast, market pressures to economize on the use of environmental resources are less vital, making the role of environmental regulation much more critical. The case study of federal environmental regulation, prepared in connection with this report, noted that important difference:

> The Consumer Product Safety Commission may be responsible for keeping dangerous products off the market; but it is the fact that consumers themselves prefer safety to danger and act in the market (and the courts) accordingly, more than the diligence and omniscience of the CPSC, which prevents major carnage. Similarly with the FDA, the ICC, the FCC, and other regulatory agencies: the positive and dynamic features of the industry, the generally-satisfactory nature of transactions in it, come about because market forces push in that direction; successful economic regulation tries to provide some stability, prevent some mistakes, and take care of some marginal inefficiencies and inequities, without interfering to much with the normal workings of the market.[46]

Environmental problems are quite different in nature. The "market failure" which causes an environmental problem is not between buyers and sellers in the market for pollution control equipment, or between buyers and sellers of steel or paper which comes from pollutant-causing mills. Rather, it is between "buyers" and "sellers" of the environmental resources themselves. Clean air, clean water, wilderness areas, and the earth's ozone layer, are resources which provide nature and human society with an array of services indispensable to recreation, industry, agriculture, health, and the very life-sustaining processes of the earth. When human society puts few demands on these resources, the supply is adequate for all. As human numbers, concentrations and activities grow, the various demands on environmental resources themselves compete and interfere: the demand for air to carry away wastes may conflict with scenic vistas, the health of breathers, or the life-protecting functions of the upper atmosphere; the demand for water to carry away heat or wastes collides with the need for recreation, and safe drinking water. In short, limited environmental resources are subject to more competing and important demands than can be met.[47]

As Dr. Ruff has observed, since there is no "market"—and hence no "buyers" and "sellers" to husband environmental resources—

> . . . environmental regulation must cope with a situation fundamentally different from that in which most economic regulation takes place: the environmental regulator is not trying to correct existing market forces which are basically supportive of his goals, because there are virtually no such forces. Buyers of environmental quality are not negotiating with sellers who can refuse to sell if

[46] Larry Ruff, "Federal Environmental Regulation," Appendix to this volume.
[47] Ibid.

their terms are not met. There is no automatic market for the new device or idea which will conserve on the use of environmental resources. There are not even any prices about which buyers and sellers and regulators can argue, and which can be controlled or adjusted or stabilized. The environmental regulator is trying to manage an extremey valuable and critical set of resources with virtually no help from market forces.[48]

2. The need to provide pervasive incentives

The absence of market forces complicates the task of regulation. Some "environmental problems" may be so unimportant that, considering the costs of management, they may not justify regulation.[49] But this does not mean that "leaving problems to the market" will result in solutions. Doing nothing is perhaps an appropriate decision in some cases, but frequently there is no "market" to which the problem can be "left."

Without pervasive market forces to economize on environmental resources, public policy may have to make basic changes in the relationships among government, business and conumers. The problem is not to "shape" or "direct" market forces, but to account for effects which, absent government intervention, may be largely ignored by the private sector. That is, the government cannot simply ". . . accomplish its ends by setting out the roles and limits within which the market economy operates . . . it may be necessary for the government to get *inside* the private economy to correct the structural flaw . . ." [50]

In other areas market forces guide firms in their choice of technology, location, materials, prices and output. The profit incentive—though sometimes blunted or misdirected by regulations or private market power, externalities or poor information—provides continuous and detailed "guidance" to firms. This continuous and pervasive force is lacking in environmental problems. An important implication of the nature of environmental protection is, as Dr. Ruff has pointed out, that "it should not be assumed that the best solution is just to beef up the traditional tools of economic regulation and apply them in a fundamentally different situation." [51]

If incentives of the sort generated by the market are not somehow provided, environmental regulators will have to be concerned with details of the actions of millions of pollution resources, in effect determining by law the appropriate use of certain resources by groups and individuals. In order to achieve some degree of efficiency, there must be a myriad of distinctions on the basis of technology, costs, location, and other considerations.[52] In other regulated areas, many of these distinctions are left to firm and consumer choice, and regulations are concerned with setting general guidelines or shaping market forces.[53] Absent incentives and natural market forces, environmental regulation must be concerned with these details. And that, in turn, complicates the task of developing enforceable rules, and puts enormous pressures on the system.[54] So too, the costs of compli-

[48] Ibid. As noted below, publicity and other public and political pressures may provide some incentive. These will presumably be quite uneven and sporadic in effect.
[49] Ibid.
[50] Ibid (emphasis in original).
[51] Ibid.
[52] Ibid.
[53] Regulation, as of food production, does frequently specify or restrict technology, marketing, and other aspects of firm choice. The analysis applies to environmental problems as well.
[54] Ibid.

ance are frequently so high that polluters will be encouraged to obfuscate and delay, and to insist upon the "essential" nature of their use of environmental resources.[55] After all, there is much at stake, since without government action the costs to polluters of using these resources is very low.

3. Determining appropriate goals and the benefits and costs of environmental regulations

Determining environmental "goals" is a most difficult process. Complete elimination of emissions or damage may not generally be an appropriate goal, as control will be costly and the objective may not be technically *feasible*. Further, such action may not be essential to protect the public health and safety or to preserve sound environtal quality. As with safety and health, cost (or feasibility) considerations suggest that some level of damage be properly tolerated. The costs of environmental regulations are substantial, in the billions of dollars per year. As Dr. Ruff has stated, while benefit estimation is most difficult, "(o)ne thing the cost and benefit estimates do demonstrate rather convincingly is that the benefits of pollution control, even if one is generous about the value of the nonquantifiable benefits, are not so much larger than costs that policy can be cavalier about economic efficiency." [56]

Generally the incremental or marginal costs of control increase sharply as the degree of abatement rises. A leading authority has noted that "(a)s a virtually universal phenomenon, the greater the percentage of pollutants already removed from an industrial process, the higher will be the cost of removing an additional amount." [57] For example, using a "wet scrubber" technology, increasing control of particulate emissions from 75 to 90 percent involves an estimated cost in dollars per year per percent of $760. For between 90 and 99 percent control, the extra cost was estimated at $5,756 per percent.[58] Technologies change, and more recent evidence indicates, that for between zero and 80 percent control, the incremental cost of mechanical control of particulates declines,[59] based on the efficiency of properly maintained and operated equipment.[60] But at present, greater control requires the use of electrostatic precipitators, which involve dramatically higher cost above the 80 percent abatement level.[61] Sharply increasing marginal costs also appear likely for control of sulfur dioxide emissisons.[62] For automobile emission control marginal cost has decreased over time at any given level of control but in any given year the costs of extra control rise sharply with the level of control.[63]

Other examples indicate rising marginal cost. When 30 percent of the "biological oxygen demand" has been removed from the discharge

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[55] Ibid.
[56] Ibid.
[57] Kneese and Schultze, op. cit., p. 19. Ruff, op. cit. concurs.
[58] D. N. Dewees, "The Costs and Technology of Pollution Abatement," paper presented at a conference on air pollution control, Mass. Institute of Technology, August, 1976 (processed), p. 12. The estimates are based on U.S. Environmental Protection Agency, "Control Techniques for Particulate Air Pollutants," (Research Triangle Park, N.C., January 1969).
[59] Ibid., pp. 13–15.
[60] Improperly maintained or operated equipment will presumably be less effective. Encouraging maintenance of equipment may require either incentives or detailed regulation. Maintenance is a major problem of current environmental regulation.
[61] Ibid., p. 15.
[62] Ibid., p. 24.
[63] Ibid., 37.

of a typical meat processing plant, the cost of an extra pound is 6 cents. At 90 percent removal the cost is 60 cents and above 95 percent the cost is 90 cents.[64] Studies of such industries as beet sugar and petroleum refining indicate similar relationships.[65] Finally, one analysis estimated the total ten-year cost of eliminating 85 to 90 percent of U.S. water pollution of $61 billion. A 95–99 percent abatement would add $58 billion to that cost, and zero discharge would require an extra $200 billion.[66] But as control of one type of pollution tightens, there may be an increased need to use other environmental resources to dispose of the captured pollutants because of the "principle of the conservation of mass." [67] For example, sewage sludge may be burned, creating air pollution and airborne pollutants removed from flue gases with water.[68] This means that meeting, for example, the Clean Air Act 1985 goal of zero discharge into water may be most difficult. 3M's Director of Environmental Engineering noted that "(f)or each ton of additional pollutants removed from the plant's waste water to achieve this goal, four tons of additional pollutants would be created elsewhere." [69] All of which suggests that the benefits from achieving high levels of control may be overstated.[70]

This is not to say that technical progress has no effect on compliance costs. To the contrary, there is evidence to indicate that over time that such an effect occurs. As Professor D. N. Dewees has observed, "In 1973, the marginal cost of control [for particulates] exceeded $25 per net percent at a level of approximately 50% abatement. By 1977, it is expected that the $25 per net percent marginal cost will not be reached until the 90% abatement level." [71] In this area, at least, technical progress appears to have offset the tendency for control costs to rise. Whether equivalent further progress will occur is not known.

The basic point is that the costs and indirect effects of regulation, and thus the efficiency of control policies, cannot be ignored. Taking the present stringent targets as given (e.g., zero discharge by 1985), even small percentage reductions in control costs would yield substantial savings. Thus, it is important to encourage development of new technologies and efficient use of existing methods—aims that cannot be directly accomplished by standards.

A further consideration in determining reasonably efficient pollution control regulations is the recognition of differences in incremental compliance costs among firms and industries.[72] If that recognition is not made, and instead all sources are required to meet the same emis-

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[64] Ivars Gutmanis, "The Generation and Cost of Controlling Air, Water, and Solid Waste Pollution: 1970–2000." (Washington: National Planning Association, 1972: Processed), Table 6.1, p. 162, cited in Kneese and Schultze, op. cit., p. 19.

[65] Kneese and Schultze, op. cit. pp. 20–21.

[66] Estimates by EPA, CEQ, the Council of Economic Advisers, appearing as an exhibit in Water Pollution Control Legislation 1971: H.R. 16896, H.R. 11895, Hearings before the House Committee on Public Works, 92nd Congress, 1st sess. (1972), p. 259, cited in Kneese and Schultze, op. cit., p. 22.

[67] Ibid., p. 22.

[68] Ibid.

[69] Air/Water Pollution Report, Dec. 11, 1972, p. 499. Attempts to control, e.g., water pollution can lead to economies in other areas. For example, to aid compliance with pollution regulations, Union Carbide developed an extensive computer data bank on its operations, including "materials balances" to identify sources of waste. This has allowed reduced use of some materials and recovery of others from the waste stream. See "How Union Carbide Has Cleaned Up Its Image"; *Business Week*, Aug. 2, 1976, p. 46.

[70] Dewees, op. cit., p. 37.

[71] Kneese and Schultze, op. cit., p. 22 note that studies of pollution control costs have not taken such spillovers into account.

[72] Kneese and Schultze, op. cit., pp. 22–23.

sion standards, the total costs for any degree of success will be raised Kneese and Schultze illustrate this as follows:

> Suppose, for example, that the achievement of the desired level of dissolved oxygen in a particular river basin demanded a reduction of 90 percent in the amount of BOD entering the stream. Further assume that removing the last 1,000 pounds of BOD costs one firm in the basin 30 cents a pound and another firm, in a different industry, only 5 cents a pound. The pollution control authority might impose a uniform reduction in BOD on each firm. But clearly the cost of achieving the 90 percent standard would be lower if the second (low-cost) firm were required to reduce pollution by a greater amount than the first. More generally, the total costs of control tend to be minimized by exacting the largest reductions in pollution from firms whose removal costs are least.[73]

Recognizing a wide variety of distinctions among firms and industries seems to be necessary, which admittedly can make the regulatory task most difficult. However, that course will also dramatically lower costs. Studies of the Delaware River Basin indicate that concentrating discharge reductions where they were cheapest would reduce cost by at least 40 to 50 percent from that of uniform treatment requirement.[74] That has also been the case for other river basins. Similar savings exist for the cost of achieving 85 to 90 percent reduction in industrial BOD discharge into the Great Lakes.[75] And, compared to uniform controls, a cost minimizing approach to sulfur emissions would lower costs by 35 to 40 percent.[76]

The size of control cost, in light of its rapid escalation with the degree of clean up, indicates that imposing very rigorous standards may require great expense. Absent a compelling rationale for achieving a particular reduction of pollution, based on a showing that deviation from a certain goal would impose very large costs on society, then flexible policies may be preferable. That is, if the cost of deviation from particular goals are not large, then potential savings can safely be given more significant weight. On the other hand, if there are "thresholds" below which exposure is "safe" and above which damage is much more serious, these thresholds should be considered firm.

Yet, as Dr. Ruff has pointed out, "[t]he concept of a 'safe' level of exposure to pollutants has become increasingly questionable as scientific knowledge and detection methods have improved." [77] A "linear hypothesis" which states that health effects vary in direct proportion to exposure at low exposure levels is being increasingly applied to mutagens and carcinogens.[78] Over a wide range of pollution levels the condition of a river may be seen as varying continuously with the level of dissolved oxygen.[79] All the same, there will be boundaries below which the river will effectively be dead and above which further addition of oxygen has no effect. For air pollution, too, the "linear hypothesis" may be a generally reasonable approximation. Standards based on indices of ambient air quality are probably only roughly re-

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[73] Ibid., p. 23.
[74] Allen V. Kneese and Blair T. Bower, "Managing Water Quality: Economics, Technology, and Institutions." (Johns Hopkins Press for Resources for the Future, 1965).
[75] Gutmanis, op. cit., cited in Kneese and Schultze, op. cit.
[76] The policy examined was a system of emission charges. Kneese and Schultze, op. cit., p. 82.
[77] Larry Ruff, op. cit.
[78] Ibid.
[79] Ibid.

lated to overall effects on the population and economy. People exposed will have a wide range of reactions, and even if individual "thresholds" exist (which is doubtful), there is no reason to expect that for an area they would not average out.

As a result, it may be that some pollution goals should not be considered wholly inflexible. But total control costs may be very sensitive to the goals sought. The case study prepared in connection with this report concluded:

> Taken together, these generalizations about control cost and environmental damage curves suggest that the best policies are those which let technology and economics, rather than some preselected environmental goal and deadline, determine the rate and extent of discharge reductions . . . . Although there surely are exceptions to this generalization, it is particularly valid in the early stages of an environmental program, when little is known about the best ultimate solution and the immediate need is to begin making progress toward lower discharges in a cost-effective manner over time.[80]

As with safety and health, uncertainty does affect policy choice. Many of the causal relationships between "contamination" of the environment and health, welfare, and economic activity are not well understood; some are only suspected, and still other links are known but of uncertain quantitative importance. For example, until quite recently, the effect of aerosol propellants on the ozone layer was unknown. The effect has now been well documented, but neither its quantitative importance nor impact on the public welfare are known.[81] Similarly, certain substances are recognized as carcinogens, but the quantitative relationships between environmental exposure and disease risk are rarely known with any degree of precision. In cases where possible costs are great but the linkages uncertain, policy should err on the side of regulatory intervention. But whether strictly-enforced mandatory standards are appropriate is open to question. Even in these cases, tax and other incentive mechanisms may be preferable, as a supplement or even a replacement for direct controls.

To understand the nature of the problem, this discussion will briefly consider "free market" and liability solutions, and then examine effluent charges and other incentive mechanisms. All of those alternatives are compared with standards and enforcement approaches.

L. The Inadequacy of "Free Market" Solutions to Pollution Problems

Generally speaking, "free market" solutions are not, in the environmental area, a viable option. The activities of a single polluter affect thousands or even millions of other firms and individuals, with whom there usually are no ongoing market relationships. Such relationships do not exist, in large part because neither firms nor individuals have clear property rights to environmental resources. Air, water, and environment are in effect shared in common by all firms in a given area.

As with an oil reservoir, a "rule of capture"—or a first come-first served basis—applies. Absent regulation, total demand on the resource may be high, due to the fact that use of the resource is generally considered free and very often the polluter need not compensate others

[80] Ibid.
[81] See Noll, Cornell, and Weingast, op. cit.

who are thereby injured. Similar to the oil reservoir situation, one possible solution is unitization or merger. To illustrate the former, if a foundry owns adjoining vineyards it will presumably adjust forging operations to take account of the effects on the grapes. Merger may also be possible. A chemical factory whose water quality is damaged by effluents from an upstream paper mill has several options: water cleaning equipment could be installed or, if it is cheaper to do so, the paper mill could be acquired and its operations adjusted to minimize the total costs of obtaining "clean" water for both plants. That merger and subsequent adjustment would, in part, internalize the external effect of water pollution.[82]

But, even assuming the likelihood of such transactions, such actions are an imperfect solution to environmental problems.[83] Pollution has a wide-ranging impact. Effective incentives could be brought to bear only if all of those significantly damaged could organize and offer inducements for abatement. The costs of that action to any one individual or firm would generally exceed the private benefit. So too, any group which did organize to induce abatement would also yield benefits to others, and that result could encourage some to remain outside the effort as "free riders." Also, since most pollution costs are "exported" to others, wholly voluntary efforts at control will be less than in labor and product markets.

Consequently, private market abatement incentives are generally ineffective. Although the notion of thousands of consumers banding together to induce a major private enterprise to curtail pollution activities appears absurd, this is, in effect, what government does in compelling such control.

M. Use of Liability System To Provide Incentives for Pollution Control

Common law liability also is not a realistic alternative. However, if pollution sources are few and identifiable, it is conceivable that liability suits could induce some abatement.

But even that could depend on whether polluters had the choice of abating or paying damages. In that situation, profit oriented firms could abate to the point where the cost of an additional unit of abatement just equaled the potential liability from an additional unit of pollution. It is very unlikely that all of those damaged would be aware of the pollution sources, and not all of those would have equal access to the legal system. Uncertainty as to the sources of pollution may lead to undercompensation and low incentives, considering that the burden of proof would be on the allegedly injured plaintiff. It will generally be difficult to demonstrate casual relationship between specific pollution sources and injury, thus discouraging legal action. A successful lawsuit will of course impose damages only on those pollution sources named as defendants. Others, who in fact share in the liability, might not have been included in the action or might be beyond the court's jurisdiction.

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[82] See Ronald Coase, The Problem of Social Cost, op. cit., p. 4–7, 17 and Richard Posner, Economic Analysis of Law, 2d Ed., Univ. of Chicago Press, pp. 48–50 (1977).

[83] Full internalization will not be desirable because of the costs of devising and enforcing remedies.

It is also unlikely that enough of the victims will be included in the suit. Legal costs, delays and requirements illustrate the inadequacies of this approach.

Therefore, neither market interaction nor liability suits are effective in providing abatement incentives. All of which suggests a possible government role, whether in creating incentives or imposing standards.

N. Pollution Standards Versus Abatement Incentives

Government-established standards is one possible approach to environmental problems. Based on declared objectives and with appropriate sanctions, upper limits could be set on emissions for each source or class of source.

For example, Congress incorporated specific numerical standards into the 1970 Clean Air Act, requiring automobile emission reduction of 90 percent within five years.[84] The Clean Air Act goal is, generally, to implement National Ambient Air Quality Standards (NAAQS's) for a variety of pollutants through a combination of Federal standards (for mobile sources, particularly automobile) and state implementation plans (SIP's). The NAAQS's involve two different standards: "primary standards," which are thought to be sufficient to protect the public health, even for especially susceptible citizens such as asthmatics;[85] and "secondary standards" which are intended to "eliminate any known or anticipated adverse effects" of air pollution.[86]

Technical and economic considerations play no role in meeting the "primary" standards. As Senator Muskie noted:

> The deadline [for automobile emission of standards] is based not, I repeat, on economic and technological feasibility, but on considerations of public health.[87]

The Federal approval criteria for state plans do not include social, economic, and technical feasibility of meeting primary standards.

If the standards are not met, the desired effects are, of course, not achieved. The many extensions that have marked automobile emission requirements indicate that standards are not necessarily effective in meeting goals. Table 5–5 shows the effect of these delays.

NEW AUTOMOBILE EMISSION CHARACTERISTICS[1]

	HC	CO	NOX
1970 emission levels	4.1	34	4.0
1970 CAA standards for 1975–76	.41	3	.4
Actual 1975 standards	1.5	15	3.1
Likely 1979 standards	1.5	15	2.0
Likely 1981 standards	.9	9	2.0

[1] All numbers are in grams per mile. The 1970 levels for HC and CO are the standards in force under the 1967 CAA, and represent a reduction from uncontrolled levels of 8.7 and 87.0, respectively. Meeting the standards actually increased 1970 NOX emissions from a pre-1968 average of 3.5 The 90-percent reduction mandated by the 1970 CAA was to be effective in 1975 for HC and CO, in 1976 for NOX. The "likely" 1979 and 1981 standards are from the House version of the CAA amendments.

Source: Ruff, op. cit.

The 90 percent reduction which, in 1970, was to be only four years away was still thought to be five years in the future in 1976. Emis-

[84] Ruff, op. cit.
[85] Ruff, op. cit.
[86] Ibid.
[87] As quoted in Senate Report No. 91–1196, 91st Cong., 3d sess., 1970, p. 32905. Cited in Bonine, op. cit., p. 19.

sions were reduced, but not by as much as planned, and much attention focused on catalytic converters rather than on other possible solutions.[88] Extreme sanctions, such as EPA orders to shut down plants have not appeared sufficient.[89]

1. The relative merits of standards and incentives in reducing pollution at minimum cost

While standards can reduce uncertainty about pollution levels they can cause inefficiency. Whenever possible, a pollution goal should be achieved at minimum cost to society. Thus, sources with low abatement costs should reduce emissions by more than those with high abatement costs. Current EPA regulations take partial account of differences in cost by setting more rigorous standards for new sources (whose design can take emission control into account) than for old sources. Extensive information would be required to design and implement standards taking full account of differential abatement costs.

The incentives approach is a major alternative to standards. Through use of incentives, pollution could be reduced to "desired" levels, perhaps at which the incremental benefit from pollution abatement equaled the incremental cost of abatement. This "nirvana" effluent fee would also provide a continuous incentive for compliance, encourage technical innovation, and encourage larger discharge reductions by the low abatement-cost sources.[90] A fee of *any* sort could, in principle, implement a "correct" level of "standards", encourage progress in compliance, and insure that the level of abatement was obtained in a cost-effective manner. Each of those goals is consistent with efficient use of environmental resources. A major problem with an exclusive standards-enforcement approach is the absence of on-going incentives for continuous reduction of emissions or innovation. Further, unless standards take into account a wide range of interfirm and interdustry differences—which is an admittedly difficult task—they are unlikely to be cost-effective.

In contrast, fee systems indirectly control emissions while providing automatic incentives for pollution control. If regulators set a per unit fee on emissions a polluter will—in order to maximize profits or minimize costs—reduce pollution until the cost of an extra unit of abatement just equals the fee. Therefore if all sources pay the same fee, they will all incur the same incremental abatement cost, and shifting emission "quotas" among sources will not decrease the total costs of abatement. Cost increases to one source would at least offset savings for others, so emissions would be efficiently allocated. The fee system in effect "screens" the low cost abaters, encouraging them to do more cleanup. This screening requires no special enforcement actions. A fee system will produce larger cost savings when there are many types of sources with different abatement costs. However, if abatement costs do not differ much among sources, the screening effect is less important, and the "pollution certainty" feature of standards might be preferable.

The evidence cited above indicates that, under the present standards approach, abatement costs do differ very substantially among

[88] Ibid.
[89] See "EPA Orders Ford to Halt 2 Car Lines," Washington Post, Feb. 9, 1977.
[90] See Edwin H. Clark, II, Comments on "Regulatory Strategies for Pollution Control," MIT Conference on the Pollution Control, Dec. 2, 1976, p. 4.

sources. Thus fee systems could yield substantially reduced compliance costs.

Fees do provide desirable incentives for compliance, since the polluter is thereby prompted to find a cheap way to reduce emissions. With standards, the incentive is more directed to obstruction and delay. And if standards are supported by severe sanctions, such as plant closings, the incentive to delay is even greater and the penalties may be rarely invoked.

Consider the example of EPA enforcement of Clean Air Act compliance for the Jones and Laughlin Steel Corporation facility in Pittsburgh, as recounted by Ruff: [91]

> EPA issued notices of violation to J&L on February 21, 1975, and then spent six months negotiating a compliance agreement. This sixty-page document specifies that J&L shall: construct basic oxygen furnaces to replace its open hearth furnaces, which will be shut down no later than November 1, 1979; bring its boilers and coke oven gas emissions into compliance during 1976 and its "hot scarfer" into compliance by April 1, 1979; reduce smoke emissions from topside pipes, and from coke oven charging operations on a detailed schedule, and "exercise good faith and make all reasonable efforts" to comply with emission limitations; rehabilitate coke oven stacks on a schedule beginning January 1, 1976, and ending January 1, 1980; undertake to develop and test equipment for controlling emissions from coke oven stacks and, if it is needed to prevent violations and it works, to install it within 21 months after a violation is established; design and construct an "enclosed quench car" to capture emissions from coke oven pushing by November 1, 1977, test it until June 1, 1978, and, if it works, install four more on a detailed schedule ending December 1, 1980—if it does not work, a new compliance schedule will be negotiated.

Achievement of this schedule clearly depends on a wide variety of technical developments, the absence of which could result in further delays. Meanwhile, incentives to maintain or exceed the schedule are neither automatic nor spread evenly over all the available means of compliance. Instead, the schedule affects only the more visible and readily verifiable means of compliance, which may or may not be the least costly method of achieving abatement. As with other general incentives, emission fees in principle encourage an efficient consideration of available methods of abatement, whether visible, less visible, capital intensive, innovative or commonplace. For that reason, they are likely to be less costly than other approaches, such as tax credits for investments in equipment, standards applicable only to new sources, or subsidies for specific programs. Of course, the even-handed benefit of general incentives depends on the ability to accurately monitor emissions.

Simply requiring use of a particular technology without assuring reliable operation will not abate pollution. And that is a significant problem. A cornerstone of Federal water pollution control programs has been large subsidies, involving many billion dollars, to construction of municipal waste treatment facilities which virtually overlook maintenance and operation of the facilities.[92] While subsidies have surely greatly increased the demand for such facilities, perhaps at the expense of other projects, they may encourage overdesign of the facilities.[93] Both EPA and GAO reviews indicate that operating costs may be 20–30 percent too high. Since investment of one local dollar

[91] Ruff, op. cit.
[92] Kneese and Schultze, op. cit., p. 37.
[93] Ruff, op. cit., notes that estimates of "needs" for facilities construction have exploded from a total of $15 billion in 1971 to $342.3 billion in 1974. Part of this is because of extended program coverage; part is attributed to overstatement of needs by municipalities completing for federal funds. Kneese and Schultze, op. cit., p. 35.

may be matched by three federal dollars, facilities are sometimes designed too large for reasonable future needs,[94] and may be unduly capital intensive. Because plants are built to EPA specifications, that agency will probably have great difficulty requiring upgrading. Lacking incentive for effective and continuous operation, discharge reductions are likely to be less than suggested by application of "BPT" and "BAT" standards.[95] By contrast, effluent charges would encourage municipalities to properly maintain and operate existing facilities while considering other methods of abatement.

Encouraging proper upkeep is also a problem with attempts to control automobile emissions. Some of those controls are dependent on frequent maintenance and can be damaged by routine problems such as the fouling of spark plugs. But, present programs provide no incentive for maintenance, and car owners can gain performance and fuel economy by degrading or disconnecting some systems; tests consistently indicate that emissions of cars in use exceed those which car models must meet before sale.[96]

Without such incentives, emission reductions will be less than otherwise, and an increasing burden will be placed on standards enforcement on new cars. The cost of proper maintenance is not high. Experiments have indicated that maintenance costing $27–$37 per car could substantially reduce emissions.[97] Mills and White describe a potential system as follows:

> . . . the following information would be added to the window sticker of each car. The expected average emissions over 50,000 miles, as determined by the pre-sale tests for the Federal effluent fee program; the emissions at zero miles of the sample vehicles in the pre-sale test; and the actual emissions (at zero miles) of the particular vehicle in question. This would allow potential buyers to obtain a good idea of the likely future emissions of the particular car they wished to purchase, and hence its likely future emissions taxes and resale value. It will tell him if the particular vehicle is likely to be an emission lemon.[98]

Unlike the present system, such a fee system could discourage purchase and heavy use of the most polluting cars. Periodic retesting and adjustment of emission fees, would encourage proper maintenance.

2. Efficiency vs. fair division of the cost of pollution reduction

The first type of incentive—the "nirvana" emissions charge—is limited by an admitted inability to fully define and accurately measure the benefits of pollution abatement. And for efficiency the fee would have to be equal, for any pollutant for all industries, firms, and sections of the country. Otherwise the marginal cost of abatement would not be equal everywhere, and total abatement costs would not be minimized. Such a general fee might appear to conflict with notions of fairness and that the degree of sacrifice should vary in accordance with ability to bear financial burdens.[99] That principle might dictate, for example, lower taxes for industries with small firms than those with larger firms. As Clark notes:

> . . . during the last decade, Congress seems to have been designing regulatory programs in a conceptual framework, which can be called a "cost-impact" approach. In simplest terms, the concept used seems to be that you squeeze somebody until it hurts, or until it really hurts, or until it hurts so bad that they

[94] Ruff, op. cit.
[95] Ibid.
[96] Kneese and Schultze, op. cit., p. 65; Mills and White, op. cit., pp. 30, 34.
[97] Ibid., p. 73.
[98] Ibid., pp. 62–73.
[99] Clark, op. cit., p. 3.

can't stand it. The emphasis is more on the capacity of the regulated group to absorb the costs of regulation, and less on whether this is the least costly way of achieving a given goal or on whether the costs are necessarily consistent with the benefits. This cost impact concept is expressed most clearly in the Water Act where there are such standards as "best practicable technology" or "best available technology, economically achievable." The modifiers, for example "practicable" or "economically achievable," serve to give some indication of how hard Congress wants to squeeze.[1]

As discussed above, equal abatement approaches can result in higher costs than necessary. The equity of allowing some groups to use environmental resources at lower cost than others is not clear. Cost effective abatement in a given area or by a given industry can be approached by fees set simply at "reasonable" levels, taking account of abatement costs, financial capacity, and other considerations. To the extent the fees differ among industries or firms, some efficiency would be lost. For example, a 10 cents per pound fee on sulfur emissions by the steel industry would encourage abatement up to the point where the cost of further reduction would exceed that amount. Whatever abatement level was attained by that industry would be produced at a minimum cost—in a cost-effective manner—because incremental abatement costs would be equal to 10 cents throughout the industry.[2] Suppose that, because of "lower financial capacity", a fee of only 7 cents was set for the copper industry. This industry would abate up to the point where further emission reductions would cost just over 7 cents per pound. The degree of abatement obtained in the copper industry would have been produced in a cost effective manner as in the steel industry. However, some overall efficiency would have been lost—since total abatement costs could be reduced, while holding total emissions constant, by slightly raising the fee on copper emissions (thereby getting some extra abatement for about 7 cents per pound), while lowering the fee on steel (increasing emissions there), at an initial abatement costs saving of almost 10 cents per pound. Total emissions would be contained at the initial level but at lower total cost. The more distinctions the fees recognize, the greater possible increase in cost.

Even fees which recognize a wide variety of distinctions still encourage cost effective abatement by a given firm or industry. Such fees provide automatic incentives for proper maintenance and operation as well as for control device construction. Most important, they provide continuous incentives for reduction of emissions and innovation since polluters would pay for the use of environmental resources.[3] And these are the most significant advantages of fee and other incentive systems. In contrast, under the standards-enforcement approach, each polluter is granted some degree of "free" use of environmental resources. Pollution up to these levels is presumed "legal." No sanction is invoked, and as a result there is no continuous incentive for emission reduction.

3. Delayed compliance penalties: Economic incentives used to implement standards

Pure fee systems might be viewed as providing "licenses to pollute," [4] whereas the maintenance of standards may appear to pre-

[1] Ibid.
[2] This assumes effective monitoring.
[3] See The Polluter Pays Principle, Organization for Economic Development, 1975.
[4] This issue figured heavily in the Senate debate on the Federal Water Pollution Control Amendments of 1972. See "Economic Disincentives for Pollution Control," op. cit., p. 63.

serve the "moral authority" against pollution. Delayed compliance penalties—such as those contained in the 1976 proposed Clean Air Act Amendments [5] and in the actual amendments to that statute adopted in 1977 [6]—combine incentives with a standards approach. The combined approach has been adopted in Connecticut.[7] The intended purpose is to reduce possible advantages of avoiding the law by imposing penalties for delayed compliance equal to the estimated benefits of noncompliance.

For example, under the proposed 1976 CAA amendments, the penalty was to be "a monthly payment . . . no less than the monthly equivalent of the capital costs of compliance and debt service over a normal amortization period, not to exceed ten years, operation and maintenance costs saved as a result of noncompliance, and the economic value which a delay in compliance . . . may have for the owner or operator of such major emitting facility." [8] The penalty would have followed a compliance order and the filing of a plan for compliance, including techniques to be used and compliance cost estimates.

Cost estimation may be a complex task, and sources expecting to be subject to sanctions will have incentives to understate and thus reduce possible penalties. This can be avoided by agency estimation of compliance costs. This may be difficult when the compliance actions are diverse and complex, although one observer states that correct assessments "... can be calculated in ten or fifteen minutes by state inspectors and engineers." [9] This may be possible for simple sources and abatement strategies, but seems implausible for large or sophisticated sources. Inaccurate estimates can be made less important if excesses can be refunded or deficits collected, all with the addition of an appropriate rate of return on capital.

The "Connecticut Plan", which implemented delayed compliance penalties, has been successful in reducing delays and enforcement costs.[10] Such penalties do provide some partially automatic incentive for compliance, which is lacking in the pure standards-enforcement system. Sources have less hope of gaining through delay, so there will be increased incentives to develop technologies for economical and prompt compliance. However, for delayed compliance penalties to be readily administered "standard" or simple methods of compliance must be assumed—and these methods may have higher costs than more complex techniques.

Delayed compliance penalties may also lead to administrative problems similar to those inherent in standards-enforcement systems. Larry Ruff, in his case study prepared for the Committee, notes:

> The weakness in the Connecticut system and in the one proposed for the CAA is that they still require agency attention to the details of each case. That is, instead of treating a discharge as something which is necessary to some extent but should be discouraged by economic forces, the extant proposals still require

[5] S. 3219, 94th Cong., 2d Sess. (1976).
[6] S. 252, section 120, Public Law 95–95.
[7] See Economic Law Enforcement, Report to the U.S. EPA by the Connecticut Department of Environmental Protection, September, 1975. See also David W. Tundermann, "Economic Enforcement Tools for Pollution Control: The Connecticut Plan," paper presented at the Environmental Study Conference Briefing, "Tax and Fee Approaches to Pollution Control," May 26, 1976.
[8] U.S. House of Representatives, Conference Report, "Clean Air Act Amendments of 1976," Section 119B (p. 17).
[9] William Drayton, Jr., "Beyond Effluent Fees," paper presented at the MIT Conference on Air Pollution Control, 1976, p. 3.
[10] Tundermann, op. cit., pp. 10–14.

a regulatory agency to define precisely what is legal, what is not, and when the illegal activities must stop, for each source individually.

This may work acceptably in simple situations involving add-on devices of well-known (and low) cost. But when compliance is a complex technical and economic matter, when innovation or technological progress is required, when the best solution involves process changes or redesign, the agency will have great difficulty defining precisely the conditions under which a fine is to be levied, and will find its judgments challenged in most important cases. The enforcement order or compliance agreeemnt will no longer be a gentleman's agreement to make good faith efforts but will become a contract specifying performance and setting penalties for failure to perform. Where technology is uncertain, dischargers will be more reluctant than ever to try anything new. Instead of agreeing to do their best, they will insist at an early stage that the applicable emission limitation is unreasonable and will fight, forcing the agency to choose between relaxing requirements or litigating. Since results cannot usually be guaranteed, the enforcement order will have to be written in terms of actions and expenditures rather than results, forcing EPA to get even more deeply into the technology and economics of industry. The process may actually be counterproductive if it leads to more conflict over what can be accomplished rather than cooperation, and if it narrows even further the range of alternative actions which are pursued.[11]

Aside from these potential problems, delayed compliance penalties lack several important features of emission fees. First, they encourage compliance but provide little or no incentive for cost-effective division of total abatement among sources. The standard, which is unlikely to recognize even the major abatement cost differences among firms in an industry, must be met and thus total compliance costs may be much higher than necessary. "Compliance" is after all the ultimate goal, and prompt compliance is encouraged even if the costs are very high. All of which may be unnecessary for desirable environmental quality. Unlike fee systems, delayed compliance penalties provide no incentive to reduce emissions below levels required by standards. The standards approach, with or without such penalties, allows some level of free use of environmental resources to each source. In direct consequence, some very low abatement cost opportunities may be foregone, and incentives for technical change are reduced.

Furthermore, as presently designed, delayed compliance penalties may, for example, induce more prompt installation of control equipment, without of course having any effect on proper operation and maintenance of this equipment. And the costs of operation and maintenance are often many times above the annual cost of the equipment.[12] Estimating the cost savings from noncompliance through improper operation (so as to impose proper penalties) is a most difficult task. One possibility would be to create a legal presumption that a firm out of compliance had done no operation and maintenance;[13] or the assumed cost savings could be proportional to the degree to which standards were exceeded.[14] An alternative would be a charge based on estimated operating and maintenance costs for, e.g., an industry, although such charges would not produce as cost-effective a reduction in emissions as more general charges. But the need to encourage proper operation and maintenance could justify some level of charge even within a standards-based system.[15]

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[11] Larry Ruff, op. cit., in Appendix to this volume.
[12] Drayton, op. cit., pp. 11–12.
[13] This suggestion is due to Clark, op. cit., p. 17.
[14] Ibid.
[15] Ibid.

4. The distributional effects of fees vs. standards

Unlike standards, fees or other incentives do generate revenues, which could finance such projects as environmental research and development or could compensate those injured by either control efforts or by pollution. Compensation must be done with care to avoid loss of efficiency. Using effluent fee revenue to compensate those damaged would inappropriately lower the cost of living in heavily polluted areas and cause excessive pollution damage.[16] Earmarking funds for a particular purpose may be risky. For example, an innovation in automobile emission control technology could quickly reduce revenues from a fee. But that need not reduce socially proper expenditures on municipal waste treatment plants.

There is no reason why a program of pollution fees should result in increased government expenditures. Pollution fee revenues come in part from the public from higher product prices, and in part from polluters. The fee and standard systems will impose different burdens on various groups: under a uniform standard system the high abatement cost sources will incur greater expense than with a fee approach. For example, stockholders of firms with old plants will lose relative to those of "new" firms. Because of limited resources, standards enforcement will generally concentrate on the larger sources, so owners of large firms and plants may lose relative to small. But if standards are enforced uniformly on small and large firms, small firms may gain under a fee system.

The reason is that in many cases abatement costs are much higher relative to output for small than large plants and firms.[17] That is so, because many pollution control technologies appear subject to significant scale economies. Under a fee system more of the abatement will be done by the larger firms with lower costs and smaller firms accordingly less burdened.

A fee system *might* impose larger financial burdens than standards, yielding the same pollution levels: under a standards system, abatement costs are incurred. With fees, firms incur abatement costs and pay fees on remaining pollution. Therefore, it is possible that a fee system may raise product prices more than a standards approach. Also, under a uniform fee system, remaining effluents will be taxed even though a relatively little damage occurs. Thus, resulting financial problems caused by the tax may drive some firms from the market. However, that need not occur, because the greater cost-effectiveness of fees may so reduce control costs that the total of fee and abatement costs would be less than the costs required by a standards system.[18]

Also one way to mitigate such adverse impacts would be to initially set fees at a low level and increase them over time. In such a system, "[t]he initial capital impact on industry will be slight while the

[16] See Mills and White, op. cit., p. 70. Some of the pollution damage may already be reflected in land values so some of those damaged may already have received "compensation."

[17] See, e.g., U.S. Senate, Committee on Agriculture and Forestry, Subcommittee on Rural Development, and "Potential Effects of Application of Air and Water Quality Standards on Agriculture and Rural Development," Committee Print, Jan. 2, 1975, pp. 293, 227–251 and U.S. Environmental Protection Agency, Office of Planning and Evaluation, Economic Analysis of Proposed Effluent Guidelines, The Electro-Plating Industry, EPA 230/1–73–007, September 1973, pp. V–5—V–9.

[18] Kneese and Schultze, op. cit., p. 94.

industry is on notice that if it does not accelerate its pollution control efforts, its burden may become heavier." [19]

5. The overall merits of incentives vs. *standards*

Strictly enforced standards are more justified when exceeding threshold pollution levels involves irreversible impact or imposes very large costs. Under a fee system, if abatement costs are higher than regulators expected, pollution could rise above the threshold level. This would occur because at the higher abatement cost level the desired level of abatement would no longer pay. Possible examples of such thresholds may be the effects of particulates on the visibility of scenic vistas and effects of extremely high BOD pollution on rivers and streams.[20] But, as discussed above, such thresholds are unusual and even if they did exist, it is most unlikely that even a substantial change in emissions from any one source would have a drastic effect on health or welfare.[21] The actual result with standards need not differ, in fact, because with higher than expected control costs delay and litigation may increase. If costs are underestimated or fall, fees could cause more abatement than might be originally expected.

Fees will not firmly fix the level of pollution if incremental abatement costs are fairly constant as abatement varies. In situations of "flat" abatement costs, a small error in fee setting can cause a large change in pollution. For example, if marginal abatement costs are $1.00 per pound between 30 and 60 percent abatement, a fee of $.95 could lead to perhaps 29 percent abatement while a fee of $1.05 could result in 61 percent abatement. Since abatement costs are never known with much precision, this could constitute a major drawback to fees. But, as discussed above, in most situations it appears that incremental abatement costs rise steeply, so small "errors" in fee setting will have little effect on abatement.

On the other hand, if damages vary steadily with pollution levels i.e., there are no threshold effects, fees may be preferable to standards: polluters can adjust abatement to take account of costs, and the risks of severe damage are small. Abatement costs are surely uncertain, and it makes little sense for society to be locked into rigid and possibly expensive standards when there is little potential risk from errors in controlling pollution. Much of the available evidence indicates that this is the case. Questions remain for hazardous pollutants, such as substances which are long lived, hazardous at very low concentration levels or risky in the sense of having very uncertain and possibly catastrophic effects.[22] One possible solution is a total ban. But this does not mean that incentive systems are inappropriate. The present system revolves around product testing and could result in considerable delay and conflict.[23] One alternative would be to increase manufacturer and polluter incentives to learn about effects by requiring posting of a substantial bond. In addition, for very hazardous substances manufacturers might be made responsible for all of the effects of the uses of their product. A "dangerous substance charge" could be paid by the

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[19] "Economic Disincentives for Pollution Control," op. cit., p. 125.
[20] Clark, op. cit., p. 8.
[21] One exception may be aesthetic pollution where the very presence of a pollution sound is seen as very damaging.
[22] Ruff, op. cit.
[23] Ibid.

manufacturer [24] which might be refundable on recycling or safe destruction. Chlorinated fluorocarbons are one candidate. With those charges the use of such substances would presumably be restricted to the more highly valued and less "frivolous" uses. Charges would not be a full substitute for regulation, but they could at least screen out the less valuable uses of dangerous substances.

Practical enforcement questions can also influence the choice between fees and standards. Standards enforcement rests largely on government monitoring efforts, with some support from moral suasion. Firms could be required to provide information on their pollution levels. Large deviations of payments from estimates based on industry averages could trigger monitoring and enforcement activities. The fee system could require less monitoring and less enforcement activity, and thus have lower costs.

Standards based on certain technology also might restrict abatement efforts to those "approved" by the requirement or the enforcing agency. But, insofar as the standards approach, there are benefits to restricting allowable technologies. It does ease monitoring and enforcement. If, as generally seems to be the case, damages rise steadily with emissions but costs are very sensitive to the level of abatement, it may be best to select a technology or level of cost—perhaps through a "best technology" regulation—and allow variation in the level of discharges. Alternatively, a tolerable level of cost might initially be imposed by a discharge fee.

Rigidity in fees and standards can cause problems. Suppose that because of threshold effects, the goal is to maintain a constant total amount of pollution, perhaps to implement a non-deterioration policy. As industry grows, fees must be raised or standards tightened.[25] Since fees are fully visible to the public, increases may involve political obstacles. On the other hand, public resistance to more rigorous standards may be less: there is less of a visible "pocketbook effect" on the general public. But the nature of effect is not clear.

Where flexibility is more permissible, threshold effects may be less important. Then, if product demand rises, the economic benefit from allowing more production also increases and less stringent pollution controls may be justifiable. Strictly enforced standards may impede this adjustment and unduly restrict output and employment.[26] On the other hand, a rigid fee structure could encourage firms to increase production and emissions by too much.

In many cases, fees could be related fairly well to emissions even without direct monitoring. For automobiles one approach would be to impose a tax based on tests made at the annual registration renewal or safety inspection.[27] Car owners should be allowed to reduce the tax by installing new equipment or by maintenance efforts to reduce pollution. The effect would be to encourage the purchase of cleaner cars, the retrofitting of some types of pollution control equipment, and proper maintenance.

Finally, subsidies may also play a useful role in pollution abatement. Firms might be paid a per unit subsidy for each unit reduction

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[24] Ibid.
[25] A pollution rights approach can solve this automatically.
[26] Pollution rights could have the same effect.
[27] See Mills and White, op. cit., pp. 56–59.

below some level. If the subsidy were, for example, $10 per pound of sulfur, discharging sulfur would then have a cost to the firm of $10 per pound. This "opportunity cost" of using the environment to dispose of sulfur is the same as if the government levied a $10 per pound effluent charge. For an individual firm and in the short run the effects would be the same—abatement up to the point where the cost of using the environment (here the foregone subsidy) equaled the incremental cost of abatement. Documenting reductions in emissions would probably be more difficult than estimating the level of emissions. Firms might enter or build new plants in part to gain access to the subsidy. This could occur unless the subsidy were limited to the existing operations of present firms. Conceivably equity might justify this solution for some existing pollution sources. Their relative income positions would not suffer as they might with a tightening of standards or the imposition of fees. Subsidizing pollution reductions would preserve a profit incentive for continuous reduction in emissions. But if given at all, such subsidies should be strictly limited to the present operations of existing sources.[28] Tax credits for purchase of pollution control equipment or subsidies to particular types of control activities may, as previously discussed, unduly restrict the range of alternatives, by focusing efforts on particular methods of remedy, and will tend unduly to encourage the subsidized activity at the expense of other possibly less costly or more effective options.

O. Combined Standards—Incentives Systems

Fees and standards are not mutually exclusive and can be combined in an effective manner: fees would provide incentives for compliance and efficiency, with standards serving as objectives or as maximum tolerable levels. The two instruments would thus be mutually reinforcing. However imposing uniform standards on all firms may not be as cost effective as a fee approach. One possibility would be to set standards for each class of source and each pollutant, and then impose a per unit fee for emissions exceeding standards.[29] The fees, which could be considered as a "penalty", would differ from the delayed compliance penalties discussed above in being purely automatic and independent of any schedule for "ultimate compliance". If attainment of the standard were viewed as particularly important for "threshold" or other reasons, the charge could increase as emissions rose beyond the standards.[30]

This is a standards approach with "pressure valves". In other words, if anti-pollution costs turn out to be higher than expected, firms could, in lieu of abatement, pay the penalty. Grave potential harm from exceeding established limits could be reflected in suitably higher penalty charges and thus risk would be reduced. Under such a combined system total fee collections would be smaller than with a pure fee, so there would be fewer complex questions of offsetting adjustments in taxes or expenditures. In addition, each source would be given "free" use of the environment, even if the abatement costs of reaching the

[28] See "The Polluter Pays Principle," op. cit., pp. 44–46.
[29] Spence and Weitzman, op. cit. As noted below, the German Democratic Republic has implemented such a system.
[30] Ibid.

standard were very low. Contrary to a pure fee system, some very inexpensive abatement possibilities may be lost.

Penalty-supplemented standards do provide an incentive for voluntary compliance. The government monitoring burden is therefore not as great as it would be under a pure standards approach. Increasing penalty fees could also provide some incentives for research and development to reduce abatement costs. A flat effluent charge provides no extraordinary incentive to develop methods to reduce the risks of high pollution levels. However, a combined standard penalty approach may be less effective than a pure fee system, since high abatement cost sources will discharge somewhat more than the standard allows. But low cost abaters will have no incentive to pollute less than the standard allows. So for any penalty level, there will be more pollution than under a pure fee approach.[31]

P. Examples of Economic Incentives for Pollution Control

Although not the key instrument of control in any country, economic incentives are used in many nations in conjunction with the more traditional administrative mechanisms of standards and enforcement.[32] A number of European countries levy changes on some air and water pollutants. While these are generally designed as user charges intended to defray the costs of control facilities, they do provide some incentives for abatement.[33]

Beginning in 1970 East Germany imposed charges on water pollutants in excess of limits allowed by discharge permits; in 1973 such charges were extended to air pollution.[34] Hungary has been imposing a variety of effluent fees since 1961, and in 1966 Czechoslovakia began charging "indemnities" for insufficiently treated waste water.[35]

In France, water pollution charges are based both on the weight of pollutants discharged and on measures of their toxicity.[36] While the charges are set well below the costs of municipal treatment plants, they do provide incentives for polluters to use low cost methods of abatement.[37] In the Netherlands water pollution fees are based on the nitrogen content of discharges as well as on biological oxygen demand, and some regional authorities levy charges on toxic substances.[38] As in France they are designed to cover the costs of treatment plants, but the higher rates may provide stronger incentives, as do the charges in some areas of Canada.[39]

In West Germany, water pollution charge systems have been administered by public water management and pollution control corporations to which all sources must belong.[40] Under a new law of 1973, which supplements the previous permit-and-enforcement system, uniform fees have been set throughout the country, and payments are

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[31] Clark, op. cit., pp. 10–11.
[32] Organization for Economic Cooperation and Development, "Pollution Charges—An Assessment," Paris, 1976, pp. 6–7 (hereinafter cited as "Pollution Charges."
[33] As discussed above, charges designed to defray facilities costs may not provide ideal incentives, but the effects are clearly in the right direction.
[34] "Economic Disincentives for Pollution Control," op. cit., p. 111.
[35] Ibid., p. 113.
[36] "Pollution Charges," op. cit., pp. 16–17.
[37] Ibid., pp. 21–25.
[38] Ibid., p. 18.
[39] Ibid., pp. 18–20.
[40] "Economic Disincentives," op. cit., p. 116.

required of all dischargers, no matter how small their pollution.[41] The choice of control technology is left entirely up to the polluter, and stated purposes include providing incentives to develop low-discharge technologies and increasing efficiency.[42]

Air pollution charges are much less common, relating only to sulphur dioxide in Norway and the Netherlands.[43] In both countries the tax is levied on the sulfur content of fuels, and abatement would occur as firms switched to fuels of lower surfur content. The OECD has reported that in Norway, at least the relatively low rates set have not induced substantial fuel switching.[44]

Overall, then, it is clear that pollution fees or charges are used in a number of European countries. While they have been proposed for the United States, no such charge has been implemented at the Federal level.

When the bill which was to become the Federal Water Pollution Control Act Amendments of 1972[45] was first considered, Senator Proxmire proposed amendments which would have added a national system of effluent charges.[46] Such charges were strongly opposed on the ground that they would constitute licenses to pollute.[47]

Arguments were also advanced that the fees did not conform with the constitutional requirements for taxes, including uniformity and a clear basis for assessment. Additional concerns were expressed that, since abatement costs were uncertain, the effect of charges could not be adequately predicted and that, insuring revenue flow should not become a motive force behind charges which, if effective, would yield continually decreasing revenues.[48] A number of other arguments were offered in opposition, and the Proxmire amendments were rejected in Committee.[49]

On March 29, 1972, then Representative Heinz introduced an amendment virtually identical to that profferred by Senator Proxmire.[50] Representative Heinz stated the by now familiar efficiency-effectiveness arguments in favor of charges, and added the possibility that the technology so generated would reduce unemployment. The opposition argued that several purposes or effects of the charges—notably revenue raising, regulation of business behavior, and encouragement of the sale of different produce mixes—were outside the proper and lawful scope of pollution control.[51] While Heinz attempted to obviate some of these points by relabeling the charges "user fees", the Chair ruled unfavorably and the amendments were neither further considered nor voted upon.[52]

However over 86 percent of sulfur dioxide emissions in this country are from fuel use,[53] so taxes on the sulfur content of fuels have substantial potential for reducing air pollution. While such taxes have

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[41] Kneese and Schultze, op. cit., pp. 109–110.
[42] Ibid.
[43] "Pollution Charges," op. cit., p. 33.
[44] Ibid., p. 43.
[45] 86 Stat. 816.
[46] "Economic Disincentives," op. cit., pp. 61–62.
[47] Ibid.
[48] Ibid.
[49] Ibid., p. 65.
[50] H.R. 11896, as discussed in ibid.
[51] Ibid., p. 66.
[52] Ibid.
[53] Kneese and Schultze, op. cit., p. 99.

been proposed on several occasions, none has been implemented. In 1972, the Nixon administration proposed, as an amendment to the Clean Air Act, a national tax per pound on sulfur emissions,[54] set low initially but increasing rapidly over a period of five years. Registered fuel buyers with monitoring equipment would have been charged on the basis of actual emissions, as would industrial nonfuel source of sulfur emissions.[55] Under this proposal, states could hav levied similar taxes in addition to the federal charge. Taxes were to be higher in more polluted areas to provide greater incentives there and to encourage a more even distribution of air quality throughout the country. The 1972 proposal died in the House Ways and Means Committee. A 1973 version (which would have instituted a uniform national charge, to take in effect in 1976, of 20 cents per pound of sulfur emitted in regions not meeting primary standards under the Clean Air Act)[56] was never introduced. In 1972 Senator Proxmire and Representative Aspin introduced a proposal for a tax on the sulfur content of fuel, beginning at 5 cents per pound and rising to 20 cents by 1974.[57]

These sulfur tax proposals died in the House Ways and Means Committee, which never held hearings on them. All industrial groups and many environmentalists were opposed, and it was alleged that Representative Mills, the Committee chairman, opposed any use of the tax system to alleviate pollution.[58] The original Nixon Administration proposal was opposed by the Commerce Department which argued that it would fall most heavily on a few industries.[59] The copper industry was particularly adamant in opposition, arguing that there was no rationale for a tax in areas meeting air quality standards.[60] This of course assumes that there is no damage from pollution in areas meeting the standards and ignores the importance of continuous incentives for abatement. To date, no sulfur emissions tax proposal has been adopted.

Other pollution-related tax or charge proposals have had similar fates. In 1970 a tax of $4.25 per pound of lead additives was proposed by the Nixon Administration to encourage the construction of sufficient no-lead gasoline capacity to support the catalytic converter-based automobile pollution control strategy.[61] Such a tax would also discourage the use of leaded gasoline, thereby reducing high concentrations of lead in the air.[62] This was a subsidiary purpose, but the EPA has since determined that lead is a significant pollutant and set standards for ambient concentration.[63] This proposal was supported by only one environmental group, was opposed by the AFL–CIO as a license to pollute, and faced the expected opposition from the oil and lead industries.[64] A variety of arguments including existing industry move-

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[54] Ibid. See also Council on Environmental Quality. "The President's 1972 Environmental Program," p. 44.
[55] "Economic Disincentives," op. cit., pp. 128–129.
[56] Ibid., p. 131.
[57] The Proxmire bill was S. 3057. See 118 Congressional Record, S. 276 (Jan. 24, 1972); see also ibid.
[58] Ibid., p. 122.
[59] Ibid., p. 128.
[60] Ibid.
[61] Ibid., p. 136.
[62] Ibid.
[63] Ibid.
[64] Ibid., p. 137.

ment to build the needed capacity, and inflationary impact led the House Ways and Means Committee not to approve the proposal.[65]

Parking surcharges have been one of the most controversial proposals for economic incentives for pollution reduction. Such surcharges—special taxes imposed on parking during peak hours in urban areas—were one elements of the "transportation control plans" which the Clean Air Act authorizes EPA to promulgate if necessary to meet ambient air quality standards.[66] EPA viewed the surcharges as a strong disincentive to individual car use in urban areas,[67] and so a force for increased use of carpooling and mass transit, and, hence, less automotive pollution. To significantly reduce automobile use, such charges might have to be very substantial indeed, since most drivers are very much accustomed to the convenience of individual auto use as contrasted with carpooling or mass transit. In that choice, existing transit fares or the direct monetary costs of auto use play a relatively small role.[68] EPA proposed surcharges were in fact substantial: $5.00 per day in Boston [69] and $1.00 per day in major Texas urban areas, rising to $2.50 in 1975.[70]

Parking surcharges encountered substantial opposition in Congress; EPA's authority in that regard was questioned, and they were criticized as regressive and harmful to downtown businesses.[71] The House Committee on Interstate and Foreign Commerce reported a bill forbidding EPA from imposing surcharges without Congressional approval,[72] and EPA subsequently withdrew its surcharge proposals in early 1974.[73] Language prohibiting parking surcharges was incorporated into the Energy Supply and Environmental Coordination Act.[74] which was signed into law on June 22, 1974.

Overall, the Congressional reaction to charges on water pollution, sulfur emissions and lead additives as well as to parking surcharges indicate that there is strong opposition to all such visible charges. There is also substantial opposition to any measure which may have a large financial impact on particular industries. This may indicate that present standards-enforcement methods of control are not effective, for if they were, industry would presumably be bearing significant abatement costs. Or, it may reflect fears that fees will be set unduly high and made improperly rigid. As discussed at length above, there appears to be every reason to believe that properly set charges could substantially reduce the total cost to society of improving environmental quality. It is therefore perhaps ironic that fee proposals have met such unhappy fates in Congress.[75]

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[65] Ibid.
[66] The relevant legislation is Section 110(c)(2) of the Act. See Ibid., p. 139.
[67] The rationale was discussed by EPA at 38 FR 30629 (Nov. 6, 1973).
[68] For evidence on this point see Thomas A. Domencich and Gerald Kraft, "Free Transit," Lexington, Mass.: Health-Lexington Books), 1970, pp. 52–58.
[69] 38 FR 17697 (July 2, 1973).
[70] 38 FR 30651 (Nov. 6, 1973).
[71] "Economic Disincentives," op. cit., p. 144.
[72] Ibid.
[73] 39 FR 1848 (Jan. 16, 1974).
[74] Public Law 93–319.
[75] Note that a number of states have experimented with charge or incentive mechanisms for particular problems. These include water pollution charges in Vermont, surveillance charges in Michigan, and bottle return charges and laws in Vermont and Oregon. See "Economic Disincentives," op. cit., pp. 85–108; 156–232.

Q. Marketable Effluent or Pollution Rights

As previously discussed, a major cause of pollution problems is overuse of environmental resources. Common ownership of the air, water and environment encourages that consumption. That trend could be reversed by establishing property rights in those resources. Such action would limit use, something which standards attempt to accomplish. But, as previously observed, a standards-enforcement approach is deficient, supplying few automatic incentives either for abatement or technical innovation. Fees can provide these incentives, even though pollution levels may not be as certain. One approach to that problem is a system of marketable or exchangeable "pollution rights", which combines incentives for cost effective, continuous abatement and technical progress with relative certainty about pollution levels.[76]

1. Efficiency effects of a marketable rights system

Under this approach, the Federal government could determine, considering environmental quality goals and abatement cost, the permissable level of any pollutant. Rights to utilize the environment could be sold at competitive auctions, or they could, in part be granted to existing sources. If the pollution in an area exceeded the desired levels, the number of rights could be decreased accordingly over time.

In contrast, the present regulatory approach in effect *gives away* rights to pollute by setting standards which define allowable emissions.[77] In some cases the "rights" are not fully without cost, since firms must utilize certain technologies for their discharges to be "legal." Yet if technological and other standards are met, the firm uses the environment "free", albeit to an extent constrained by regulation. Thus, there is no incentive to reduce use below levels established by standards.

There is little gain for firms in profits or other benefits by further reducing pollution. However, if rights to pollute were exchangeable among firms, and those rights required lower total pollution levels, then environmental resources would be scarce and rights to pollute would be valuable assets. A firm that wanted to increase its use of the environment, could do so only by acquiring rights from others. High abatement cost sources would be willing to pay more for rights, because such acquisition would reduce abatement costs. Yet use of the rights would necessarily mean less potential revenues from the sale (or lease) of those valuable privileges. Thus, existing sources would have incentives to economize on the use of the environment. Low abatement cost sources would tend to sell off existing grants of rights, even if they were initially granted at no charge, and instead abate. Such sources would opt for abatement rather than purchase valuable rights from sources which could, by their use, avoid incurring higher abatement costs. The result would be that the price of a unit right would be driven up to the incremental cost of abatement. This price and hence the incre-

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[76] The leading discussion including analysis of problems of managing a system of environmental rights in E. H. Dales. "Pollution, Property and Prices" (Toronto: University of Toronto Press, 1968) See also E. J. Mishaw "Technology and Growth, The Price We Pay" (New York: Praeger Publishers, Inc., 1969) especially Chapter 5, "Property Rights and Amenity Rights", pp. 36–42.

[77] Ruff, op. cit.

mental cost of abatement would be the same for all sources, and, hence abatement would be cost-effective. If the total quantity of rights is correct, in the sense that the emission standards they implement reflect a proper balance between benefits from improved environmental quality and the cost of achieving those benefits, the result will be "socially efficient." Even if the overall level or regional allocation of rights is not socially correct, competitive rights auctions or markets will produce the desired amount of abatement at minimum cost. The government still must decide on the desirable level of emissions.

Many of the effects of such a system would be similar to those of a system of fees or taxes. Both fees and rights provide incentives for sources continually to weigh the use of the environment against other alternatives such as product and process changes. In addition, those using the environmental resources pay for them, either directly or in the sense of income foregone because of the use of rights.

Rights could specify allowable discharges at various times to account for changing condition.[78] For example, a utility might acquire rights to emit a greater number of tons of sulphur during its summer peak period than in the winter, while the winter rights might be bought by a steel company which would then have an incentive to produce more during that season, perhaps increasing its inventories to meet summer demands. The result could be a more even and efficient pattern of demand for environmental resources. Further if discharges are more harmful in one area than another, rights could specify the ratios at which they would be transferred.[79] Communities which desired air or water cleaner than the usual standards could use tax revenues to purchase pollution rights, and then simply not use them. Alternatively, federal law might give states or localities the power to "condemn" certain pollution rights or exercise the power of eminent domain.

2. *Relative merits of rights, standards, and fees*

The rights approach does maintain control and predictability which are often cited as advantages of standard-enforcement approaches.[80] Therefore, this approach is most appropriate where predictability is considered very important—for example, where the potential harm from pollution is great, and where incremental costs of abatement are moderate and not subject to rapid increases with the degree of abatement.[81] Thus, they may be appropriate for some hazardous pollutants or for areas where irreversible damage might occur were pollution to exceed some threshold. Since abatement costs appear to rise sharply in relationship to abatement, and threshold pollution levels often do not exist, fees may be a *generally* preferable method of improving environmental quality. Determining rights quotas without precise knowledge of abatement possibilities could, just as with the standard-enforcement approach, impose very large costs.

However, if a limit on the total amount of pollution is desired or necessary—whether for reasons of health and welfare or because clear goals are politically preferable—the rights approach has desirable

[78] Ruff, op. cit.
[79] Ibid.
[80] Ibid.
[81] Ibid.

characteristics. If markets for pollution rights operate competitively, abatement will tend to be cost-effective. Abatement (or "compliance") incentives will be largely automatic, provided that discharges are monitored. Sources faced with unexpected problems, such as slow development of abatement technology or unusually high product demand, have access to a safety valve not present in the standard-enforcement system: they can lease or purchase rights from other parties. With careful enforcement total discharges will be constrained but the regulatory authority will be able to be less concerned with the discharges of any individual source.

A rights approach would be dependent on monitoring similar to that required for standard and fee systems. Yet the problem in that regard may be greater than with fee systems. In order to work, a rights approach must have effective sanctions for firms exceeding discharge levels permitted by their rights. As with standards, a *small* variance in discharge estimates can lead to *large* differences in fines or expenditures.[82] This could lead to controversy over monitoring and estimation. Under a fee system, slight monitoring errors need not lead to large differences in payments or inferences of illegal behavior.

Enforcement need not rely exclusively on direct monitoring. Firms could be required to report pollution rights in various geographical areas. Multiplant firms would have to submit output and rights statements on a plant or area basis. Discharge estimates using industry averages could be used to check the adequacy of a plant's rights, with monitoring undertaken in questionable cases. Municipalities, states, and other governmental units could submit similar forms. Violation of rights requirements could be subject to substantial penalties; and, in order to reduce controversies over monitoring, grace periods could be allowed for compliance, or charges could be levied for temporarily or modestly exceeding the emissions allowed by rights. Violators could also be allowed to demonstrate "good faith" by contracting for the purchase of rights from others.

The rights system has several, additional desirable effects. In areas where abatement costs were very high, rights would have a very high value, automatically making pollution expensive. Small rights allocations could preserve the aesthetics of certain areas, while allowing essential activities to continue.

3. Problems in implementing rights systems

Rights prices could provide unbiased estimates of compliance costs and be used to guide government policy, especially to determine if the costs of achieving environmental goals are acceptable or sufficiently low to suggest more ambitious goals. For this to work well, the market for rights must be effectively competitive, and there may be problems in that regard. For example, if only one major sulphur dioxide source existed in a region, it could have an incentive to bid low for rights, thus understating its abatement costs. That could be countered, however, by setting minimum prices based on estimated abatement costs in areas where there were few bidders. But such minimums should be subject to revision if technological progress reduces abatement costs. Another strategy would be to reduce the number of saleable rights

[82] Ibid.

if the price fell significantly below estimates of abatement costs. This would cause sources to hesitate before underbidding lest they be faced, in effect, with more stringent standards in the future. Antitrust monitoring of rights markets would also be useful to prevent large existing sources from preempting the supply of rights to deter future entry and competition.

With a fixed number of rights, economic growth would automatically increase incentive to debate.[83] The value of rights would rise, thus increasing the incentive to avoid use of the environment. This might seem to impose overly great burdens on developing regions. But if avoiding threshold levels of pollution is important, this result is appropriate and rights only make this tradeoff explicit.

4. Distributional effects of rights systems

Rights systems have complex equity effects. Ruff notes that rights as well as fees force pollutors to "pay" for environmental damages:

> When markets are used to allocate the valuable "right to pollute," there is a real sense in which everybody is treated equitably: everybody has access to the market on equal terms and pays the same price for inflicting approximately the same damage on society. Those who use more of the resource pay more for the privilege, those who spend money to reduce their use of the resource pay less. The economic value of environmental resources can be captured by the larger society which presumably owns them, and need not be given away to particular individuals simply because they have a good technical and economic reasons for using the resources.[84]

However, there may be transitional problems in a rights approach just as with a move to a fee system. Changes would occur in relative prices, which could cause bankruptcies. Some firms may have chosen locations on the assumption of free environmental use. Also while well-to-do municipaliities might be able to buy up rights and preserve a cleaner environment for their own citizens, poor communities would not necessarily have this option. This problem could be lessened by granting all municipalities significant quotas of rights without charge. Industry would purchase rights, so industrial areas might have higher pollution levels. This makes economic sense: in these areas lowering pollution would be costly, and might decrease production or increase unemployment. Presumably this problem could be solved (though perhaps it should not) by appropriately defining the areas in which rights could be used and by proper setting of standards.

The government would be under great pressure to give away the rights, as occurred with oil import quotas, ICC certificates of convenience and necessity, radio frequency allocations, and airline routes. This has some justification in "compensating" or shielding firms who had made good faith investment decisions based on assumptions of free disposal, but rights might not be initially allocated to their highest value uses, although it tends to ultimately occur. Subject to some geographic constraints, efficiency requires that rights be freely transferable. In addition, to prevent the development of vested interests, freely granted rights should be for limited periods of time. This

[83] Assuming no technical progress in abatement.
[84] Ibid.

would serve efficiency by exposing polluters to an explicit market test (as would a fee system) and by requiring holders frequently to determine that environmental use was preferable to abatement.

5. Overall merits of rights systems

If the goal is not so much to maintain *uniform* standards as to minimize compliance costs, rights might be bid from low to high cost areas. Rights and fee approaches could be combined. Moderate fees could be used to move discharges in the right direction and put dischargers on notice to look for ways to limit pollution. As knowledge was gained about abatement costs and technologies, ambient quality standards could be developed and regional pollution authorities organized. Eventually these authorities would implement and administer systems of rights which might be enforced by fees as discussed above. Transition to rights system would be particularly delicate as a new market must be created where there was none before. Thus, as discussed below, the transition should probably be gradual, supported by government provided information and oversight.

6. An infant market for pollution rights? EPA's "offset" policy under the Clean Air Act

Though the emission or effluent rights approach may, on first consideration, appear merely to be an academic contrivance, an EPA Interpretative Ruling has in fact instituted many of its features.[85] This ruling, now in effect, treated the question of ". . . whether and to what extent national air quality standards established under the Clean Air Act may restrict or prohibit growth of major new or expanded stationary air pollution sources."[86] The problem addressed by the ruling is quite real, for, under the Clean Air Act plans for all major[87] new emission sources must pass a "pre-construction review." The attainment dates for the National Ambient Air Quality Standards (NAAQS) had passed and many areas had not yet met the standards. Thus the Clean Air Act could, in fact, have prohibited new emission sources and, hence, industrial growth in many areas.

Under the EPA Ruling, new sources could be constructed and operated, in areas not meeting the NAAQS, only if "emission offsets" were arranged to meet the following requirements: (1) Offsets would be on a greater than one-for-one basis—e.g., to be allowed to discharge 1500 tons of carbon monoxide a new source might have to arrange for an offset (emission reduction by another source) of 2200 tons; (2) Offsets would have to be used or lost, and thus could not be "banked" against future needs.[88]

In addition, all facilities constructed under the ruling would be required to use "best available treatment technology," and states would have final approval authority over any offsets as part of state implementation plans.

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[85] 41 FR 55524.
[86] Ibid.
[87] Defined as sources with allowable emission rates of 100 or more tons per year of specified emission or 1,000 tons of carbon monoxide. 41 FR 55525.
[88] It might appear that community associations or others desiring to simply "purchase" clean air by acquiring, but not using, emission offsets could not do so. This interpretation was offered by the Council on Wage and Price Stability. See Council on Wage and Price Stability, Comments, Air Quality Standards Interpretative Ruling, Mar. 3, 1977, pp. 10–11.

The EPA ruling in effect, set up the basis for a market, albeit a restricted one, in air pollution rights. For example, assume that "Firm A" wishes to enter a region not meeting the standard for sulfur dioxide, and it considered the potential profits from entry to be worth $10 million per year. Suppose also that, even using the best available technology, the firm would have to discharge, as part of its production, 5000 tons of sulfur dioxide per year. To continue the example, "Firm B" in the same quality region could reduce its sulfur dioxide emission by 6000 tons per year at a cost of less than $10 million per year. Then it would pay Firm A to induce Firm B to "sell" it an offset. Firm A would then pay Firm B to reduce pollution. Since Firm B will only grant the offset if it is profitable to do so, both firms gain. Therefore, it appears that economic efficiency should increase. If the offset is granted, a scarce resource—a portion of the absorptive "capacity" of the air in the region as defined by the NAAQS—has been transferred to a more highly valued use. Industrial or community development can take place and, because of the more than one-for-one offset, air quality improves.

This system is similar to a market in effluent rights. Existing sources which meet standards acquire (or are granted by EPA and the States) property in their current use of the atmosphere. Continuing to pollute will have a cost to present sources in terms of the payments or other inducements which they will forego by doing so. It will become expensive to continue to pollute the atmosphere, and firms will have an incentive to reduce emission *below* their present levels. This contrasts with the simple standards approach under which polluters have incentives to reduce emissions *to*, but not significantly *below*, the maximum allowed. As expressed by the Council on Wage and Price Stability, ". . . each discharger would tend to consider a new alternative: will I treat additional units and sell the generated emission rights or not treat and use them?" [89] Since a goal of policy is, presumably, to allow maximum economic well-being consistent with "clean" air or, equivalently, minimum pollution for any level of economic activity, it appears entirely correct for polluters to pose this question.

The EPA ruling does not, of course, create a market. Rather, it allows one to develop. It is not fully clear how potential new sources will "shop" for emission offsets. Presumably firms with existing operations in an area will have the easiest time arranging offsets, as they can first consider adjusting some of their own operations.

7. Example of exchanges of pollution rights

To date, a true private market does not appear to have developed. And such a market will surely never be wholly private. A number of offsets have been arranged with the cooperation of state, local and federal pollution control agencies.[90] The Boston area has not attained the NAAQS for particulates. Yet a new energy plant is being planned for a major medical center on the agreement it will replace seven older units. The new unit is expected to emit over 41 percent fewer particulates than the old facilities.[91] The Pennsylvania Department of

[89] Ibid., p. 7.
[90] EPA, "Offset Policy Success Stories," Office of Enforcement Memorandum.
[91] Ibid., p. 2.

Environmental Resources was able to arrange for the state's Department of Transportation to reduce its use of liquid bituminous asphalt in road paving and surfacing.[92] The result was a sufficient expected decrease in hydrocarbon emissions to allow the planned New Stanton, Pa., Volkswagen plant to conduct paint spraying operations, thus allowing plant construction. Of course, the alternative might have been slightly higher plant costs. Apparently Pennsylvania considered the benefits from the plant (or from increased certainty of its construction and operation) to exceed the costs of cutting back or otherwise changing road paving and surfacing operations. Thus, the offset may be a subsidy to the plant.

In another example of offset, Kaiser was able to increase the number of basic oxygen furnaces at the Fontana, California steel mill by closing eight noncomplying open hearth furnaces. And in Oklahoma City, General Motors was able to obtain clearance to build a truck plant by agreeing to reduce emissions from existing facilities.[93]

8. Areas in which the offset policy could be improved

Some features of the ruling might render the "market" less effective than it might possibly be. First, the requirement of greater than one-for-one offsets could unduly deter the entry of new sources or new economic activities. In addition it means that existing sources will face a lower incentive to clean up than they would under a one-for-one offset, and new sources would be induced to engage in more abatement than they would under a one-for-one offset requirement. Since the clean-up incentive to existing sources is reduced, total emissions might be higher than they would with less stringent requirements. And, since abatement costs rise rapidly as abatement is increased,[94] total costs may be much higher than they need be to attain the NAAQS, because some new sources may be driven to incur much larger costs than would be required by some existing sources.

The EPA Interpretative Ruling did not specify the size of the "offset ratio." Possibly, a ratio greater than one was set so the ruling would be a tool to *improve*, not simply maintain air quality. A somewhat greater ratio could be justified to restrict the demand on governmental resources used to oversee and monitor the program. But it would appear more efficient to cover these costs by levying a monetary fee on new sources.

The ruling also requires that emission offsets be used immediately. But, as the Council on Wage and Price Stability noted ". . . if buyers of emissions offsets cannot hold them for future use, investment in plants for future expanded output might not be made." [95] Firms will not be able to acquire rights when available and use them when most economic. Since the total number of rights outstanding would, if exercised not violate the NAAQS, it appears that such "banking" could yield economic benefits while causing no extra environmental damage. It is not clear what purpose was to be served by effectively requiring firms to generate pollution which they would prefer to forego.

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[92] Ibid., p. 3.
[93] Ibid., p. 5.
[94] See Allen V. Kneese and Charles L. Schultze, "Pollution, Prices, and Public Policy" (Washington, : The Brookings Institution, 1975), pp. 19–22.
[95] Council on Wage and Price Stability, op. cit., p. 9.

The ruling also required that facilities constructed under the offset policy must use the best available control technology. It is not clear why this was considered necessary. Under the offset policy, total emissions must be decreased. Requiring any particular control technology appears to lower flexibility and increase costs, while not necessarily improving environmental quality. Desired reductions in pollution can be obtained by varying the requiring offset; requiring best available technology cannot make the sources involved willing to incur higher costs or agree to greater emission reductions than they would without the requirement. The only possible gain appears to be a greater standardization of technology and some increased ease monitoring and enforcement. It is debatable whether this gain is worth the loss of cost-effectiveness in abatement that results. In addition, the environmental regulators must concern themselves with the specific technology to be used in the new sources. One potential advantage of the offset policy, which it could share with the more general transferable pollution rights approach, is a reduced need for direct agency involvement is such detailed technical decisions.

The principles of this offset policy have been incorporated into the Clean Air Act Amendments of 1977,[96] with application to major stationary sources such as those which emit one hundred tons or more of any air pollutant.[97] Preconstruction permits are required for all major stationary sources, thereby insuring that construction or operation will not "cause, or contribute, to air pollution in excess of maximum allowable concentration for any pollutant . . . more than one time per year" [98] or violate any standard lnder the Clean Air Act.[99] Permits may be issued upon an agency determination that, at the time operations begin total allowable emissions (including those from the new source) will represent reasonable progress, as defined by the Act, toward goals set by state implementation plans,[1] or that total stationary source emission will not exceed permissible maximums. All proposed facilities must use best available control technology,[2] a requirement that the Clean Air Act imposes on all sources by 1980. As discussed above, this provision may needlessly reduce flexibility and decrease potential cost-effectiveness. Offsets are allowed, as made explicit by the conference report on the amendments.[3]

The provisions are to be administered as a part of state implementation plans. Therefore, the criteria for determining allowable offsets, both in terms of quantity and location, may be quite varied. The closer the policies come to allocating offsets to the highest bidder, as would occur in a competitive market, the more efficient will be the allocation of environmental resources. This will be difficult to achieve since at any one time there may be few suppliers and demanders of offsets of any given pollutant in the same area. This means that even without state involvement bargaining is not likely to be competitive. Over time,

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[96] P.L. 95–95 U.S. House of Representatives, Conference Report, Clean Air Act Amendments of 1977, Report No. 95–564, Aug. 3, 1977, p. 157; U.S. Senate Committee on Environment and Public Works, Committee Print, The Clean Air Act as Amended, August 1977, Serial No. 95–11, November 1977, p. 97.
[97] Ibid., p. 143—section A.
[98] Ibid., p. 82 (section 165(a)(3).
[99] Ibid.
[1] Ibid., section 173.
[2] Ibid., p. 82—section 165(a)(4).
[3] House Report No. 95–564, op. cit., p. 157.

as the policy becomes better defined, more and more sources are likely to come to view their implicit pollution "rights" as valuable assets which can be bought and sold. The greater the number of actual and potential demanders and suppliers of offsets (rights) the more likely is it that the offset policy will be able to make a significant contribution of cost-effective abatement and adaption to changing circumstances. To assure this, it is important that the overseeing agencies not restrict possible transactions by, for example, barring monetary payments or by restricting the nature of the parties who can acquire or induce emission offsets.

State agencies may be under great pressure to approve the first "bidder" for a potential offset even though that party may not place the highest value on the implicit pollution rights being offered. Thorough inventories of emission sources could help in the arrangement of offsets. The operation of this policy has not been evaluated. But it appears to be a force for increased environmental quality at lower cost to society. It is also a useful experiment in the feasibility of implementing a broader system of marketable effluent or pollution rights. Doing so is preferable to the extent that tightly constraining emissions is desirable.

Chapter Six

TRANSITIONAL PROBLEMS ASSOCIATED WITH REGULATORY CHANGES

A. Issues of Protection and Compensation: General Policy Consideration

Very often, major regulatory change alters the distribution of benefits and costs among members of society; almost necessarily, some will gain and others will lose. Firms, consumers and government agencies must adjust to the new economic environment; old ways of doing business may not suffice; and new problems and opportunities will arise. All of which can impose costs. Of course, change should preferably be structured so as to avoid nonessential cost and facilitate adjustment. Even with such care, some losses may occur.

The degree of injury, if indeed one occurs, is likely to be greatest during transitional periods. With the passage of time, firms, consumers and governments will adjust to changed circumstances. Entry or capacity expansion will frequently erode abnormally high prices or returns; exit will reduce the incidence of large losses; and technology will generally adjust to changed circumstances. For example, firms faced for the first time with effluent charges or the cost of pollution rights will tend to conduct "pollution inventories" of their facilities in order to disclose economical ways to abate. Assuming prior lax enforcement, many firms may initially bear an unnecessarily high burden of charges (or rights expenses) and abatement costs. Over the longer run, changes in process and products, and cost-effective shifts in abatement will reduce the burden. Transition is also the time when firms and agencies will be least expert with the new system. This argues for a gradual phasing in of new systems, even though to do so may mean postponing substantial benefits. Calibrated shifts, in accord with well-defined schedules which allow planning and rational adjustments, will tend to insure gradual changes in the market environment, thereby lessening the probability of mistakes and the need for excessive adjustments. Step-by-step appraisal of effects is thus permitted.

Basic public policy considerations indicate that the range of cases in which adjustment assistance, let alone the more extreme and sweeping measure of compensation for losses, merit consideration is extremely narrow and perhaps nonexistent. Change is inherent in the very nature of public policy. It is a fair question why losers from regulatory changes might be entitled to compensation while others have not been so treated. Open and rational congressional weighing of the effects on various groups in society should be expected to result, over the long term, in a reasonably fair distribution of gains and losses among the various groups in society. With proper attention to constitutional requirements of due process, there appears to be no

compelling reason to give special or overriding weight to the claims of those who may be damaged by regulatory changes.

Moreover, to deny or delay change because of possible losses to some group is to deny consumers and society possibly substantial benefits in order to maintain the position of a few. This might be a justifiable principle for at least delaying changes or implementing them slowly if, indeed, the benefits to the regulated were in fact generally substantial. But it is not at all clear that, in many or most cases, the regulated will lose from the kinds of changes discussed in this report.

In many of the cases of possible deregulation or regulatory relaxation, many of the possible or potential gains to the regulated have been eaten up or wasted in excessive investment, capacity, and socially unproductive service competition. Further, if regulatory changes lower prices and consequently encourage consumption of the services or products of the regulated sectors, even the regulated interest may gain. This appears to have occurred in the case of airlines. Moreover, to compensate the regulated interests for the consequences of change means that the incentive to plan for and anticipate change is reduced. If compensation or assistance comes to be expected, groups will be less hesitant about demanding regulatory assistance or protection; and if compensation for the effects of change is granted, such groups will also have more of a tendency to demand the reimposition or reinstitution of regulatory controls following initial relaxation.

In the safety, health and environmental areas the possible rationales for protection and compensation are even more questionable than in the economic sphere. As has been made clear throughout most of this volume and in the relevant case studies in the Appendix, many of the potentially desirable changes in such regulation would lower the total cost of achieving social goals of properly safe and healthful working conditions and products, and clean environment.

Thus, it is not clear that compensation, protection, or even adjustment assistance merits extended consideration. For example, as noted earlier in this section, moving to an information based strategy for some aspects of product safety regulation or to economic incentives to deal with certain environmental protection concerns will substantially decrease the need for imposition of capital investment and other costs by regulatory controls, and can be expected substantially to reduce the costs of achieving suitable goals of product safety and environmental quality.

And, the granting of compensation or assistance will necessarily involve Congress or the regulatory commissions in complex questions of who is entitled, to how much, over what duration, and for what reason or reasons. Because the market will generally adjust to the presence of any regulatory scheme, many presently regulated interests may neither perceive nor actually receive substantial gains from regulation. Some, however, may have gained substantially. And if compensation, assistance, or protection depends on actual or projected losses due to regulatory change, and the regulated know and expect this, they will have every incentive to capitalize on this fact. That is, they will make plans and investments to increase their possible losses from change, or at least to create that appearance so as to qualify for greater compensation. Or, while many may not move so far as to

actually increase their potential losses, the incentive to make socially desirable contingency plans to adjust to changed circumstances will increase. That is to say, anticipating compensation or adjustment assistance, the regulated are likely to act to become ever-more policy-dependent, and, to an even greater extent than at present, wards of the State.

Such a dependent situation, where industry is and perceives itself as a client of the government is surely not one to be further encouraged: for such a posture hampers policy making and can enshrine outmoded regulatory regimes. Further, in a time of increasing and substantial concern with the costs of government programs, it is clearly essential to provide incentives for the regulated to plan for change.

Thus, considering the fact that many changes will not harm the regulated, while others will indeed help them, the provision of compensation does not, as a general principle, appear justifiable.

It will be difficult to determine just who has suffered because of regulatory change. Shifts to direct subsidy from cross subsidy via regulatory restrictions on entry (assuming service is constant) will benefit the previous high rate customers at the expense of taxpayers. Providers of service may gain, and service quality may improve especially to the high-cost areas. Relaxation of entry restrictions can increase competition and therefore benefit consumers; but some firms may lose business, with subsequent losses in wages or employment of workers in those firms. But if deregulation lowers rates, total output should rise, increasing employment. A shift from the present standards-enforcement method of environmental regulation to pollution charges could benefit high abatement cost firms,[1] while potentially harming others. Some of the harm will come as firms previously causing excessive damage are induced to make adjustments. Since these firms presumably gained by prior inaction, it does not appear that they are entitled to compensation. Adverse impact also occurs from replacing a previously ineffective regulation. For example, assuming lack of compliance and thus absence of substantial abatement costs, a change in pollution controls would be costly to consumers of pollution-intensive goods—although those who favor high environmental quality as well as producers of abatement equipment would gain. However, if the standards-enforcement approach had induced a non-cost effective pattern of abatement, consumers of pollution-intensive goods might gain as product prices *fell* due to increased efficiency. A shift from a technology-based environmental program to incentives could harm producers of some environmental control equipment while reducing compliance costs.

In product safety regulation, shifting from a standards-banning approach to an information strategy could benefit consumers by speeding technical change, though losses would be imposed on those heavily committed to old technologies and possibly on consumers who were particularly averse to risk or less capable of using information.

The ultimate question—"what stance should public policy take toward such cases?"—is not answerable on objective grounds, but is a matter of social and political judgment. The following sections instead concentrate on other key questions: Will losses necessarily occur? How

[1] Because these firms would not necessarily have to incur high abatement costs but could choose to combine some abatement with payment of fees.

can it be determined who may have suffered losses? What sorts of losses are likely? What are the economic and other effects of various methods of attempting to shield various groups from the effects of change?

Policy makers must decide who is eligible for compensation. Obvious candidates would be those holding legally conferred rights, such as ICC certificates of convenience and necessity and FCC spectrum allocations. But many forms of regulation (such as health, safety, and environmental) do not confer explicit property rights. But, as noted above, they can do so implicitly by allowing firms legally to use environmental resources without cost. Thus present regulations create expectations upon which capital investments, locational decisions, and choice of occupation are based. Regulatory changes can affect the value of such "investments." Even when legal property rights are conferred groups other than the rights-holders are affected by changes. Allowing banks to pay interest on demand deposits could damage savings and loan institutions; conversely, permitting those institutions to issue checking accounts could injure banks.

Yet it is unrealistic to expect protection compensation for *all* those damaged by change. Large amounts of private and governmental resources would be used in seeking protection and compensation and in regulating its award. Claims are difficult to value, even in cases where legal rights have been regularly bought and sold. Claimants may argue that most of their earnings are due to regulations. Claims of those affected indirectly will be difficult and perhaps impossible to evaluate. Attempts to provide total compensation will involve highly speculative projections of what might have occurred had regulation continued. If continuing claims are allowed, the compensating agency will continually have to decide which groups are deserving and which are not. In so doing, it will be likely to assume a regulatory role and thus detract from the objective of the change.

B. Limited Precedent Exists

The Trade Act of 1974 provides, to a limited degree, some precedent for consideration of damages caused by regulatory changes but not, in any sense for compensation, much less permanent postponement, of change due to losses imposed on certain interests. Title I of the Trade Expansion Act of 1962 authorized the President to reduce trade barriers up to 50 percent, and led to the so-called "Kennedy Round" of trade negotiations. There were fears that relaxing trade barriers might harm some workers, firms, and communities, while benefitting the country as a whole. Partly in response to those concerns, the Trade Act of 1974 provided for both adjustment assistance and temporary relief from import competition. Adjustment assistance can be granted to firms, workers and communities. The Labor and Commerce departments determine whether imports were the cause of the injury, but for adjustment assistance the standard for proof of damage does not require a showing that the increase in imports was due to trade concessions.[2] Individual firms or unions can seek assistance, as can community associations and governments.

The Act does not provide for a full or partial "buy-out" (compensation for losses) as an offset to losses. Workers can be granted extended

[2] This was required under the Trade Expansion Act of 1962.

unemployment compensation and government funded re-training and relocation assistance. Firms can be given low interest or Federally guaranteed loans, tax write-offs, and other forms of Federal assistance. There is *no attempt to compensate* for losses of high wages or of profits which might have been collected in the absence of the policy change. This appears appropriate.

Checks are distributed to workers through state unemployment offices as supplements to unemployment benefits. Workers can receive 75 percent of their former wages or 50 percent of the average manufacturing wage,[3] whichever is less, during periods of unemployment. Rather than attempting to *compensate* for changes, the notion was to assist adjustment and provide needed support. However, little use has been made of moving and retraining benefits.

In addition, Section 201 of the Trade Act allows for *temporary* import relief (via trade restrictions such as tariffs or quotas) under the "Escape Clause" of Article 19 of the General Agreement on Trade and Tariffs. The standard of proof requires a showing that imports have increased to an extent that the domestic industry is threatened. Investigations to determine injury are conducted by the International Trade Commission. There is no requirement to show that the injury has occurred because of trade concessions, but the standard of proof is more stringent than that required for adjustment assistance. This seems appropriate because the whole industry benefits from import restrictions. While the ITC can recommend adjustment assistance, firms have not asked for it, but have instead sought import relief such as tariffs and quotas. Relief is not to be permanent, but limited to five years with a possible three-year extension.[4] Assistance is intended to be sufficient to prevent or remedy the injury, not to provide total compensation.[5]

Overall, then, the Trade Act provides adjustment assistance to help workers, firms, and communities adjust to regulatory changes. It does not provide for compensation, but rather for some aid and, possibly, partial postponement of the effects of shifts in trade patterns, and temporary prevention of injury. This is similar to requiring that regulatory changes be announced well in advance and/or phased in over time, to allow more considered planning and smoother adjustment. Both of these features appear generally appropriate generally in the regulatory arena, and neither entails compensation. For example, in moving to negotiated brokerage rates, the SEC gave three years advance notice. And rates on transactions over $300,000 were deregulated in advance of rates on smaller transactions.[6] No compensation was granted; rather, possible losses were properly treated as a risk assumed by the regulated.

C. Effects of Regulatory Change on Certificate and License Holders

1. Effects of regulatory change on owners of motor carrier operating rights

Motor carrier operating rights under ICC Certificates of public convenience and necessity are often very valuable. According to the

[3] Telephone conversation with Messrs. Joblonsky and Gearhart of the International Trade Commission staff.
[4] Ibid.
[5] Ibid.
[6] Hans Stoll, op. cit. in appendix to this volume.

American Trucking Association the investment in operating rights increased at an annual rate of 16 percent from 1962 to 1972, and payments for authorities are on the order of 15 to 20 percent of annual revenue produced under the authorities, or about $2.5 billion in 1972.[7] The value of these rights has been increasing, and—as ATA has pointed out—"[t]he vast majority of the increase in value of operating rights results from carriers purchasing these operating authorities from other carriers at amounts in excess of the value carried on the seller's books. It is rare indeed for a carrier to sell . . . rights at a price less than their cost." [8] A review of a sample of operating right purchases and sales during 1970, 1971, and 1972 showed that gains occurred in 37 of 43 sales reviewed.[9] These gains ranged from a low of about $3000 to a high of about $390,000.[10] There was no gain or loss in four of the transactions and book value exceeded selling price by amounts of $4000 and $5000 in two sales.[11] Rights change hands frequently and at substantial prices. For example, during 1964 Eazer Express, Inc., acquired certain operating rights from Fleet Highway Freight Lines, Inc., for $200.000.[12] In 1973 these same rights were purchased by Yellow Freight System, Inc., for $800,000.[13] The purchase did not include other assets. This $600,000 increment in value represents an increase of over 230%, for an average annual rate of appreciation of over 14 percent.[14] All of which indicates that regulated truckers are able to charge prices above the normal competitive level. If this were not true, rights would not exchange at substantial prices. Only the prospect of prices well above normal business costs (excluding the cost of certificates) would induce truckers to invest substantial sums in assets not physically or economically required for production.[15] In the absence of entry and pricing restrictions the value of the rights would certainly fall, inflicting losses on those who had purchased them.

It is not at all clear that equity dictates that assistance be granted, much less compensation be paid, if regulation is changed. Further, designing a fair and administratively tractable system of assistance or compensation would be most difficult. The original owners of the rights were the primary and clearest beneficiaries of the ICC restrictions initiated in 1935. "Grandfathering" of the rights of existing carriers in effect conferred on them gifts of operating rights, which have increased in value with the growth in trucking. Many current carriers have had to purchase their rights, either directly or through merger for acquisition. These certificate holders will tend to receive only normal returns on their certificate investment, because the value of the rights will reflect any expected excess of revenues over the costs of providing service. This value will be captured by the seller of

[7] "Accounting for Motor Carrier Operating Rights," Brief and Petition of the American Trucking Association before the Financial Accounting Standards Board of the Financial Accounting Foundation, (processed), undated, pp. 5–6.
[8] Ibid., p. 6.
[9] Ibid., p. 7.
[10] Ibid., p. 8.
[11] Ibid.
[12] Ibid.
[13] Ibid.
[14] Ibid., p. 8.
[15] Rights to specified levels and patterns of use of highways could be used to control highway congestion or the wear and tear on roads from heavy truckers, in manner analogous to airport landing rights and pollution rights. ICC operating rights do not take these factors into account and are not aimed at these potential problems.

the rights. The same would hold true for broadcast licenses, pollution rights, or any other similar grants of privilege or use of public resources.

With entry restricted by certificates, rapid demand growth or technical improvements (such as the development of the interstate highway system) can give rights holders above normal rates of return.[16] This means that some rights holders perhaps have already been "compensated for" their initial investment, (which may have been zero, in the case of the original "grandfathers"), and are thus certainly entitled to no further government aid. Recent purchasers of rights will be less likely to have reaped such benefits though it is not clear that, if advance notice is given, any special treatment is appropriate.

2. Effects of changes in broadcast and cable television regulation on holders of FCC licenses

Possible adverse effects on broadcasters provide another example of the possible role of compensation. Allowing distant signal importation and pay cable television would decrease some broadcasters' advertising revenues and license values, while perhaps benefiting viewers with increased programing, as well as independent stations in some large markets.[17] Some stations received licenses as part of the initial FCC spectrum allocation, but others acquired them subsequently at prices reflecting potential future earnings. These stations need not earn above normal returns on their investment. Entry (whether by cable television or by expanded spectrum allocation to television) would inflict losses.

If the government opened the broadcast spectrum to competitive bidding, incumbents who had expected to be able to continue to reap returns based on whatever investment (or lack thereof) they had made might suddenly find themselves forced to meet competing bids, and thus incur higher expenses. The government might consider granting some compensation out of revenues received from the sale of what is, in fact, public property.

3. Deregulation need not harm producers: The effects of decontrol by the CAB

Similar problems could arise in air transport though the effects of recent relaxations of entry and price controls appear to have been generally positive. There, net size decisions have been based on assumptions about the level of consumer demand on particular routes, as well as on the degree of competition on those routes. Relaxation of route restrictions has caused entry into some of the denser markets though stimulated travel demand has prevented losses and buoyed profits. On the other hand, allowing airlines some fare discretion would permit more efficient lines with excess capacity to increase profits; the decline in service competition, coupled with increased price flexibility, would also raise returns. Thus, there need be no question of compensation or assistance.

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[16] This tendency will be limited by the ability of certificate holders to expand output, or engage in service competition. Thus, absent collusion high returns may be more likely in broadcasting (though program quality competition exists) than in trucking.

[17] See Bruce Owen, op. cit., in appendix to this volume.

The likely effects of more-or-less complete airline deregulation on air carriers, workers, and aircraft producers are, of course somewhat uncertain, but would almost certainly not be drastic, as indicated both by studies and recent experience with a substantial lessening of regulatory controls. Some authorities have claimed that CAB policies have in effect set fares to significantly increase the number of seats provided. If this is the case then deregulation might reduce the number of flights and the demand for airline pilots and workers as well as aircraft. Evidence from intrastate routes in Texas and California indicates that—

> . . . in nearly every case studied, the number of flights *grew* after the institution of low-fare service provided by intrastate carriers. . . . Thus, the few instances we have seen of dramatic fare reductions would seem to contradict . . . (the) assertion that a reduction in fares would reduce the demand for aircraft.[18]

The study prepared by Professor Keeler for the Committee indicates that the overall effect of competition on number of flights is ambiguous, since the effect depends on the flight-increasing effect of lower fares relative to the flight-reducing effect of increased load factors due to decreased service competition.[19] The effect of deregulation on seats sold, profits and, hence, the viability of airlines is highly dependent on the price sensitivity of the demand for air travel—on the price elasticity of demand. Most studies indicate that this elasticity is substantial—well over one—which means that, a ten percent decrease in average fares would lead to a more than 10 percent increase in aggregate traffic.[20] Using an estimate of a 16 percent fare reduction with complete deregulation,[21] Miller predicted that the range of effects on trunk air carrier profits would be as shown in table 6–1.

TABLE 6–1. SENSITIVITY OF SHORT–RUN INDUSTRY PROFITS TO DEMAND ELASTICITY (ASSUMING SUDDEN, COMPLETE DEREGULATION 16–PERCENT FARE DECREASE, $10 BILLION TOTAL INDUSTRY REVENUE)

Demand elasticity assumption	Change in (short-run) industry profit rate	
	Millions of dollars per year	As percent of initial industry total revenue and cost
$e_d = -0.7$	−660	−6.6
$e_d = -1.0$	−352	−3.5
$e_d = -1.3$	−44	−0.4
$e_d = -2.0$	+675	+6.8
$e_d = -2.5$	+1,189	+11.9

Source: J. C. Miller, op cit., p. 19.

This hypothetical range indicates that the likely effect of even total deregulation would probably not be drastic. While some airlines would probably expand their fleets in anticipation of deregulation, tending to reduce profits, *total* deregulation is not likely, and so the overall effect would probably be smaller.

[18] George Douglas and James C. Miller, "Economic Regulation of Domestic Air Transport," op. cit., p. 176. [Emphasis added.]
[19] Theodore E. Keeler, "Domestic Trunk Airline Regulation: An Economic Evaluation," in Appendix to this volume.
[20] James C. Miller III, "Effects of the Administration's Proposed Aviation Act of 1975 on Air Carrier Finances," Transportation Journal, Vol. 15, Spring, 1975, p. 18.
[21] Ibid. The estimate of 16 percent is taken from Douglas and Miller, op. cit.

Recent experience with the administrative reforms instituted under the direction of former CAB Chairman Alfred Kahn appears to have resolved much of this uncertainty and indicate that the demand for air travel may well be more responsive to lowered fares than had been believed. During the first quarter of 1978 revenue passenger miles flown by the domestic trunk airlines were 13.6 percent above the equivalent figure for 1977.[22] Available seat miles provided by the trunks (that is, capacity offered to travelers) rose only 5.6 percent for the trunks over the same period, resulting in an increase in load factor (that is, the percentage of available seat miles actually sold to passengers) from 53.6 percent to 57.7 percent. The local service airlines did even better, with increases of revenue passenger miles of 17.4 percent, available seat miles of 7.8 percent, and a resulting load factor increase from 50.5 to 55.1 percent. These changes are entirely consistent with the theory and evidence, discussed elsewhere in this report, and with the special analysis prepared for the Committee by Professor Theodore Keeler, to the effect that previous CAB policies of fixing fares and barring entry had resulted in excessive service competition and capacity in the industry.

This increase in total traffic and particularly in load factors, has allowed the lower fares to yield increased total profits and, presumably, increased return on investment in the industry. As compared with the first quarter of 1977, for the domestic trunk airlines, operating profits in the first quarter of 1978 were approximately $73.1 million as compared with a loss of more than $27 million during the first quarter of 1977. For the local service airlines, excluding Ozark, for which figures were not available, total operating profits in the first quarter of 1978 were about $1.9 million as compared with a figure slightly higher in the first quarter of 1977. This lack of growth was dominated by extremely poor results by Allegheny. Several airlines, particularly Frontier, Hughes Airwest, and Texas International had extremely favorable profit growth.

The reasons for this generally improved traffic and profit picture have yet to be fully explored. Specifically, it is not known what proportion of the increase in traffic is due to lowered fares. But it is noteworthy that the increase would not appear to be attributable to improved business conditions, as GNP actually declined somewhat during the first quarter of 1978, while revenue passenger miles continued to climb smartly. Thus, it is plausible to conclude that much of the increase in air travel was due to the lower discount fares. Whether this increase is permanent or represents a transitory "boom", as consumers catch up on postponed trips or are attracted by the publicity surrounding the regulatory changes and resulting lower fares, is not clear. But as a first approximation, the airlines appear to have prospered under substantial deregulation. Thus, for the airline industry as a whole, there is no valid argument for any form of government aid.

Proposals to supply assistance or compensate would be complicated by the fact that the effects of regulatory changes will often vary greatly among firms in an industry. However, if differential treatment

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[22] All data are based on compilations of CAB statistics by the Congressional Research Service, Economics Division, Congressional Research Service. Current financial status of the airline industry and the effect of discount fares. May 11, 1978.

were granted, care must be taken that the scheme does not provide incentives to reduce efficiency in order to capture larger assistance. For example, if compensation or assistance were proportional (or equal to) the decrease in profits, firms might have incentives unduly to expand capacity in order to improve their future market position. Such a scheme could cause excess capacity. One solution would be to base treatment on past performance relative to some base period before announcement of the reform. But any scheme where treatment depends largely on an individual firm's actions could lead to distortions. All of which suggests an inevitable conflict between equity, in terms of "appropriate" treatment of losses, and maintaining incentives for efficiency.

The likely and actual effects of airline deregulation illustrate the potential for widely differing impacts on various firms. Studies have shown that the sensitivity of traffic to fares (price elasticity of demands) varies from route to route, so some routes will gain and others will lose flights. Airlines serving routes where demand is insensitive to fare would lose, and that might include lines serving routes used primarily by business travelers. Other carriers will gain. In addition, fares in long haul and high density markets are most above competitive levels.[23] Lines with a disproportionate share of such routes—including American, Trans-World, United, Continental and Pan American—were expected to face with a higher incidence of substantial fare reductions.[24] The four largest lines (American, Eastern, Trans-World, and United) and National were forecasted to experience a higher incidence of fare reductions than would Braniff, Continental, Northwest, Pan American and Western.[25] Overall, Miller predicted that Braniff would gain the most from a program of partial deregulation,[26] while Trans-World could stand to suffer, particularly because of few short term profit opportunities on "monopoly" routes, a higher incidence of price reductions on long and high density routes, and fewer opportunities for route expansion.[27]

Overall the small trunk lines were expected likely to gain relative to the large.[28] In that regard, Keeler concluded that "while deregulation could benefit holders of capital invested in the airline industry, it is likely that some airlines, some investors, and workers will lose in the short run." If, as seems likely, competition decreases union power, pilots and others may find their wages rising less rapidly than in the past.

The available data indicate that the profit opportunities competition allowed are more substantial and broadly based than had been believed. As compared with the first quarter of 1977, American's first quarter 1978 results indicated increased losses. Eastern showed a 16.1 percent increase in operating profits. TWA and United both experienced very sharp increases in operating profits, indicating that increases in traffic were larger than had been assumed in the analysis cited above. In addition, National Airlines experienced a very substantial profit increase, providing further evidence of unexpectedly high sensitivity of

[23] James C. Miller III, op. cit.
[24] Ibid., pp. 20–21.
[25] Ibid., p. 21.
[26] Ibid., p. 26. The program was that of the Ford Administration's Aviation Act of 1975, S. 2551.
[27] Ibid., p. 22.
[28] Ibid., p. 27.

travel to fares. Braniff and Continental gained substantially, while Pan American appeared to suffer from its relative lack of domestic routes. As compared with the first quarter of 1977, only American and Pan American failed to experience substantial profit increases. And all of the local service airlines except Allegheny experienced increases in profit. Thus, while the picture does differ among the various firms in the industry, it is not at all clear that there is any justification for compensation in this industry, at least under present circumstances. It is possible that more complete deregulation would cause problems, or that the present high level of demand is transitory. But the evidence available suggests that this is not the case.

D. The Distribution of Gains and Losses From Regulation and Regulatory Changes

This potential for widely differing impacts raises a vital policy issue. If assistance is called for when regulatory changes reduce returns (or impose capital losses) might not taxation be fair when reform confers benefits? This was a major feature of many proposals for deregulation of natural gas. That is, to prevent regulatory change from conferring undue "windfall profits." What principles might underly demands that assurance be given? One possible response is that government's duty is to shelter consumers, communities, investors and management from strongly *adverse* effects of policy decisions. Proposals for community assistance to aid adjustment to military base closings may reflect this principle.

All of the price controls designed to shield consumers from large price increases can be similarly interpreted as can the adjustment assistance and import relief provisions of the Trade Act of 1974. Regulatory initiatives such as increasing airline or motor carrier competition, reallocating the frequency spectrum by auction, or instituting pollution charges may confer relatively slight but widespread benefits on many individual consumers, and yield a net benefit to all users and producers taken together. Losses may be concentrated on the few—the owners, creditors and possibly employees of firms confronting those changes. This asymmetry in the relative size of gains and losses might justify some form of special treatment. But the converse also holds true: tightening regulatory constraints will often impose small, widespread per capita costs while conferring very large benefits on the protected few. In the latter situation, the insignificant nature of the damage tends to provide little incentive to oppose more rigorous regulation. However, such is not the case with those who benefit from regulation: there is every incentive to protect that situation against changes.

E. Effects of Regulatory Changes on Related Firms' Access to Capital Markets

Adoption of new regulatory approaches, which involved changes in risk and profitability, may have a decided transitory impact on the ability of firms to obtain capital and on the costs at which they can do so. The net effects of regulatory changes in stockholder and creditor risks and returns cannot be specified *a priori;* that

is, the offsetting influences at work imply that some firms' access to capital markets will be improved while others will be worsened. This greatly weakens any possible case for special treatment, as by loans, grants, or interest-subsidies or government guarantees. The effect however has been a matter of serious concern. For example, in testimony before the Senate Subcommittee on Aviation, an officer of the Equitable Life Assurance Society of the United States (a major financer of airlines) noted that "the prospect of increased competition between airlines has raised deep concerns among lenders." [29,30] The insurance industry has investments of about $3 billion in airline equipment; Equitable alone has $375 million.[31] However, evidence to date suggests that the concerns were misplaced. Bush claims and assertions will not be in short supply.

Problems of access or access only on unfavorable terms could be caused by capital market *uncertainty* about the effects of new arrangements. Thus, sudden relaxation or imposition of constraints could place firms in an unfamiliar environment, perhaps without requisite skills. This applies to more rigorous regulation, such as nationalization or public ownership, just as to decontrol. Similar problems could be caused by changes in the nature or form of safety, health or environmental regulation. Considering the size of compliance costs and potential penalties that may be involved, the capital market effects of shifts in these "noneconomic" areas may be more pronounced than those of very substantial "economic deregulation."

For a time financial markets may, quite reasonably, demand substantial risk premia or deny "adequate" amounts of financing at customary rates. The critical factor, in this regard, is the degree of information and certainty investors and financial institutions have about the nature and likely impact of new regulatory arrangements. Thus one way to mitigate the financial and operating problems of regulated firms is to announce definite timetables for gradual movement to new regulatory schemes.

Government loans or guarantees during the transition *could* serve to ease firms' access to captial. But a key problem is easing access *too much*, so that firms take too many risks and therefore do not feel effectively with the new environment. Loan guarantees appear more desirable than grants or subsidies; loans must be repaid, so firms must be concerned with efficiency. But even such aid carries with its hazards of misuse, waste, and inefficiency.

Regulatory programs requiring substantial capital investments can lower profits, severely affecting cash flow and raising capital costs. This will be particularly true for small firms required to install equipment to comply with OSHA or EPA regulations. Since such equipment becomes more efficient as scale increases, smaller firms may face higher per unit compliance costs. Also their profits will fall relatively more than those of large firms, with adverse affects on market viability and access to capital. Since the smaller firms do have higher compliance costs it appears efficient for the market to restrict their access to capital.

[29, 30] New York Times, Mar. 24, 1977, p. 40. (William A. McCurdy, testifying.)
[31] Ibid.

In that situation, government intervention perhaps could be justified on several grounds. First, it may be considered desirable to preserve smaller firms as an independent competitive force by assuring them access to capital at favorable cost. However such a policy would constitute continuing support rather than transitional aid, and it is not clear that an inefficient small firm segment would be a vigorous competitive force. Second, government may intervene on the notion that capital markets are imperfect and biased against smaller firms, demanding higher return or lower risk than would be economically justified. Yet the evidence for this proposition is not at all strong.[32] And, if true, it applies generally and is not a special concern for regulating change. Both arguments could justify such support to small firms even in the absence of major regulatory change. The first argument could justify not only loan guarantees or other forms of capital subsidy, but also continued operating subsidies. The second is more limited, and justifies only a capital subsidy, preferably in a form containing some incentives for efficiency. The Small Business Administration has a special program of loans for OSHA compliance which may ease the differential impact on small firms.

F. Effects of Regulatory Changes on Employees of Regulated Firms

With deregulation and entry of new competitors, some firms may be incapable of functioning in the new environment, with adverse effects on employment and income of their workers.

Offsetting these possible negative effects on particular groups of employees, deregulation which reduces monopoly power and lowers prices is likely to increase total industry production and employment. Shifts in environmental or safety and health regulations can also induce changes in output and adversely affect employment. For example, if a fee approach more effectively internalized pollution damages than present regulations, its implementation could decrease output and employment in pollution-intensive industries.[33] But if compliance costs are thereby lowered, workers, as well as investors, will gain.

Certainly, it is improbable that individual workers will be able accurately to forecast the risk of deregulation or other regulatory changes, or predict the likelihood that a particular employer will not fare well in the new environment. That inability possibly could justify payment of some temporary adjustment assistance, though alternatively the problem might be left to standard unemployment insurance if that was considered adequate. Workers may have acquired skills which are only useful in certain firms or industries. Demise of a firm could destroy the value of that acquired talent. Stockholders are not so dependent, since by contrast relatively few individuals or institutions hold the major share of their wealth in a single investment in one firm or industry.

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[32] See Charles River Associates, "Imperfections in the Venture Capital Market Faced by Small Technology Based Firms," National Bureau of Standards—Experimental Technology Incentives Program, 1976.

[33] This could be offset by lowered costs due to cost-effective abatement.

1. Possible wage losses from deregulation

The possibility that economic regulation has contributed to union strength and wage gain poses particularly difficult problems of transition. The high returns of regulated firms may present attractive targets for union wage demands. Managements will be more willing to grant high wages, confident that competitors will be forced to charge uniform high prices. If regulation bars or restricts entry, new nonunion firms will be unable to enter and undermine the positions of the unions and their members. By limiting the number of firms in the industry, regulation also simplifies the task of union organization. If profits are constrained by price or rate of return regulations, firms may attempt to take some of their potential returns in nonpecuniary forms, such as greater benefits for workers which ease the task of labor relations.

For some or all of these reasons, workers may have a substantial interest in maintaining the status quo, at least concerning economic regulation. That may be so, even though higher costs of unionized firms induce increased production by competitors both within and without the regulated sector. Also labor union officials have an interest in maintaining an industry structure conducive to organization. So too, unions will want to assure the survival of firms with which they have learned to deal, and so may quite reasonably wish to maintain entry restrictions.

In addition, there is some evidence that workers in some regulated industries have obtained high relative wages. Table 6–2 compares the compensation paid by regulated and unregulated truckers in 1972. These data indicate that the regulated class I carriers (revenues of $1–$5 million) paid over 30 percent, and regulated class II carriers (revenues between $300,000 and $1,000,000) paid about 33 percent, greater compensation than unregulated firms in each category. The evidence is only indicative. First, the quality of labor employed in the two sectors may differ. The unregulated sector includes warehouses and intra-city transfer firms which are lower-paid occupations even at union wage scales. In addition, the Teamsters have organized drivers of some unregulated truckers and obtained the same wages as paid by regulated common carriers. Thus regulation is clearly but one potential element in determining wage differentials.

TABLE 6–2. AVERAGE ANNUAL EMPLOYEE COMPENSATION IN REGULATED AND UNREGULATED TRUCKING, 1972[1]

	Regulated	Unregulated	Percent by which regulated exceeds unregulated
Class I property (revenue $1,000,000 to $5,000,000)	$11,099	$8,504	30.5
Class II property (revenue $300,000 to $1,000,000)	10,033	7,566	32.6

[1] The average revenue for the larger unregulated carriers (revenues over $1,000,000) was $1,750,000, so they are compared with regulated carriers with revenues between $1,000,000 and $5,000,000.

Sources: Unregulated: U.S. Bureau of the Census, Census of Selected Service Industries, 1972, "Subject Series Nonregulated Motor Carriers and Public Warehousing," S(72–S–7) (C.P.O. 1975). Regulated: Interstate Commerce Commission, "Transport Statistics of the United States," year ended Dec. 31, 1972, pt. 7, Motor Carriers, releases 2 and 3.

Gains due to unionization or other factors cannot readily be distinguished from benefits due to the union-regulation interaction discussed above. The gains may have little to do with regulation, but instead be attributable largely to effective union activity.

G. Impacts on Regional Distribution of Production

New regulatory approaches in many areas are unlikely to cause major shifts in the regional distribution of production; changes would occur only to the extent that regulation significantly affected relative transportation costs in various areas, or changed other incentives influencing the choice of location. Generally, Federal regulation has fairly uniform effects geographically and so would be unlikely to cause substantial shifts.

However, milk marketing orders, natural gas regulation and, in some cases, EPA regulation probably do have substantial differential effects on some locations. Milk marketing orders and regulations affect the regional production distribution in two basic ways. First, prices throughout most of the country are based on the "Minnesota-Wisconsin" base price, plus an allowance which is generally believed to more than cover transportation costs. As Minnesota and Wisconsin are the most efficient milk producing areas in the country, this system guarantees that producers in other areas can meet competition from these lower cost region. Because of this the "M-W" base system, high cost production in states such as Florida and Arizona is increased, and Minnesota-Wisconsin production is lowered below what it might otherwise be; as a result total costs of milk production are raised. These impacts have surely increased in recent years as the technology for shipping and storing milk has improved.

Second, regulations reducing incentives to market reconstituted and filled reconstituted milk (rehydrated dried milk with added nondairy fat) have similar effects. Such milk is potentially much more palatable than home-reconstituted powdered milk; and is considerably cheaper than fresh milk, with cost savings perhaps on the order of 42 cents per gallon in 1976 dollars, or almost 20 percent less than current retail prices. Recently, Arcadia Dairies sold reconstituted milk in North Carolina at a price 20 cents per gallon less than fresh milk. Sellers of commercially reconstituted milk must pay a penalty, essentially equal to the differential between their costs and the price of drinking milk. They thus have little incentive to market these products. Much of the dried milk that would be used in such products would come from the low cost Minnesota-Wisconsin area. The regulations thus further depress production in the Upper Midwest, in addition to reducing overall consumption.

Relaxing the regulations would encourage importation of milk from Minnesota and Wisconsin and depress production elsewhere. Land values in the upper midwest would rise, and dairy farmers in Florida and other (particularly Southern) areas would lose; some would undoubtedly go out of business. Except to the extent that regulation strengthens the market power of agricultural cooperatives, dairy farmers in the high cost areas probably do not make abnormally high returns. Whether or not they do, changing regulation to allow more importation from outside the region would impose capital losses on farmers in the high cost areas and a shift in production. Because of the hardships to some farmers during the transition, any relaxation should be gradual. Yet maintaining the present regulations effectively deprives farmers and other landowners in Minnesota and Wisconsin

of the full value of their properties, not to mention raising costs and depriving consumers of the potentially very substantial benefits from commercially reconstituted milk.

Natural gas provides another example of regional impact. Since intrastate sales of natural gas are presently not subject to FERC regulation, producers have incentives to make greater supplies available to the intrastate market. One result has apparently been increased location of heavy gas users, such as chemical producers, within producing states. Relaxation of price regulation or imposing regulation on intrastate sales would alter that situation. Intrastate users would lose while others would gain. The bias toward intrastate sales would be eliminated; over a period of time some gas using industries would shift out of gas producing states as the gas price differential would decrease. Regulation of prices for intrastate sales under the Natural Gas Policy Act of 1978 should, over time, tend to alleviate these effects.

The regional distribution of coal production could be also affected by shifts in EPA sulfur and particulate emission standards. A relaxation of sulfur standards would increase production of high sulfur coals, shifting the balance of production and discouraging the development of lower sulfur coals. Similarly, relaxation of particulate standards would encourage production of Western coal at the expense of Eastern and Midwestern coals. Shifts in regulatory approach, such as from standards to taxes, need not have such effects; but since they cannot be predicted with certainty, some impact is likely.

Regional impacts are still another source of vested interests which are likely to oppose major changes in regulatory approaches. In addition, if negative regional effects are concentrated, regional spillover and multiplier effects (as of the closing of a number of plants) could justify special adjustment assistance or other forms of temporary subsidy, as discussed below.

H. Mitigating and Reducing the Impact of Regulatory Changes on Small Communities and Other Groups

Small communities are of concern for two reasons. First, under present regulation they may benefit from cross-subsidized service, a major declared advantage of present regulation. Second, small communities may be especially dependent on one or a few plants, firms, or industries. Any regulatory change which adversely affects these critical sources of income and employment could injure the entire community. Larger communities are more likely to be diversified, and thus more capable of sustaining such changes. While small communities are thus susceptible to particular impact, they are not in that regard unique. Many regulatory changes will significantly impact the groups most dependent on present regulation.

In telecommunications, less-than-truckload freight, and air transportation, the unit costs of serving small, as compared with large, communities are often higher.[34] These higher costs are generally due to the existence of significant fixed cost relative to the small size of the potential market. The number of planes demanded by local service carriers or for similar operations may be too small to permit low cost produc-

[34] On airlines see Theodore Keeler, op. cit., and Civil Aeronautics Board "Report Task Force on Service to Small Communities," May 18, 1976, Appendix C, pp. 3–4.

tion of suitable craft. But other factors raise the costs of local service carriers, including high labor costs and FAA regulations.[35] However it appears that small communities can be served at lower cost by commuter airlines operating small planes.

With substantial deregulation and without subsidy, individuals in certain small communities might pay higher prices for a given quality of service. If unit cost exceeded the price consumers were willing to pay for *any* level of service, then an unregulated industry would discontinue service unless a subsidy were granted. While this would (in the absence of external effects) be economically efficient, it may not be politically viable.

Similarly abandonment of rail service to some small communities might have disruptive social impacts, cause high unemployment and damage other business and consumer interests. Without regulation or legal sanction, such factors are unlikely to be critical in railroad adandonment decisions. Thus, a vital policy question is whether the financial responsibility should be local or federal. Many of the purported benefits of providing uneconomic service accrue to local residents, so substantial local financing of any subsidy is justified on grounds of fairness and efficiency. Local governments appear best equipped to appraise the value of continued service, and to determine the proper size of subsidy, tax concession or other incentives. And further, if the locality does not bear the cost, too much uneconomic service may be requested.

Fears of service abandonment may be exaggerated. The American Trucking Associations argues that price deregulation and free entry would destroy common carrier service to many small communities.[36] Recent evidence indicates that such fears have little basis in fact. A study commissioned by the Senate Committee on Commerce, Science, and Transportation concluded that "(P)redictions of wholesale elimination of service to small communities following deregulation are completely unsupported by the data . . . Rather, it appears that service to small communities would not deteriorate and might, in fact, improve under deregulation." [37] This study, based both on surveys of carriers, shippers and undetailed statistical data, found that even the smallest communities enjoy frequent common carrier trucking service and that the majority of the providers of that service find it to be desirable business.[38] This is quite contrary to the theory that regulation is necessary to require that motor carriers cross-subsidize such service out of higher profits elsewhere. Rather, it indicates that even under totally unregulated competition, service would tend to continue. Thus, not only is the notion of regulatory cross subsidization of trucking service to small communities unsound on theoretical grounds, because of service competitions tendering to use up the potential cross-subsidy "fund" as well as the difficulty of enforcement, it is not supported by available evidence. In addition, were ICC entry restrictions to be relaxed, it is likely that more firms would begin to serve a number of small communities.[39] If there is in fact regulatory cross-subsidiza-

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[35] Ibid., p. 4.
[36] American Trucking Associations, "The Case Against Deregulation," op. cit., pp. 55–56.
[37] The Impact on Small Communities of Motor Carrier Regulatory Revision, op. cit. p. 128.
[38] Ibid., p. 89.
[39] Ibid.

ion of service to smaller communities, the data should indicate relatively lower quality of service to the very smallest and presumably most costly communities, especially considering the very limited use of resources by the ICC to enforce these common carrier "obligations." The data do not indicate this to be the case, as in fact the perceived quality of service to the very smallest communities is not significantly different than that received by larger "small" communities.[40] Shippers in small communities do use a relatively high proportion of joint-line traffic (that is, traffic which moves by a series of connecting motor carriers) than do larger communities, and there are suggestions in the data that some joint-line rates are cross-subsidized out of single-line rates.[41] Thus, under deregulation, it would seem that some small communities might be harmed by an increase in joint-line rates. This need not be the case, as the evidence for cross-subsidization is far from conclusive. And, without ICC restrictions on routes, commodities, and entry, motor carriers would be better able to rationalize their operations, and cover broader territories, allowing more frequent offering of the preferred single line service to small communities. Thus, there is very little, if any, evidence of actual cross-subsidization of trucking service to small communities and even less indication that such service would significantly deteriorate in the absence of regulation. In air travel, routes which do not cover direct costs will not necessarily be abandoned. Feeder routes to small towns generate traffic for continuing flights, and customers preference for single line flights provides a substantial incentive to maintain much *apparently* uneconomic service.[42] In addition, uneconomic service cannot be provided without substantial excess profits elsewhere in the system, but there is compelling evidence that much of the potential profit is competed away in scheduling and service rivalry. Thus, only a small fund is available to subsidize uneconomic service.[43]

What, in fact, is the likelihood of such air service abandonments? A study performed for the Department of Transportation indicates that the current amount of unprofitable service is small, and that regulatory changes would result in few airline abandonments.[44] The CAB Report of the Senate Subcommittee on Administrative Practices and Procedures, using data supplied by the major airlines, arrived at similar conclusions.[47] While a study sponsored by the Air Transport Association of America [45] predicted wholesale abandonments following deregulation, a detailed GAO evaluation based on analyses by leading airline experts concluded that the ATA study was invalid.[46]

Where abandonments did occur, several approaches could be taken to mitigate the impacts of changes. Especially rail service abandonments could be constrained in cases of high community dependence, and serv-

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[40] Ibid., p. 128.
[41] Ibid., p. 125.
[42] See Civil Aeronautics Board Practices and Procedures. Report of the Subcommittee on Administrative Practice and Procedures, Committee on the Judiciary, U.S. Senate, 1975. pp. 67–71.
[43] Ibid., pp. 63–68.
[44] See Simat, Hellieson, and Eichner, "The Transition to a Less-Regulated Environment," 1976.
[45] Air Transport Association of America, "Consequences of Deregulation of the Scheduled Air Transport Industry," April 1975.
[46] General Accounting Office, Comments on the Study "Consequences of Deregulation of the Scheduled Air Transportation Industry," CED–77–38, 1977.
[47] "CAB Administrative Practices and Procedures," op. cit. Also see Theodore Keeler, op. cit.

ice maintained by public subsidy as is now provided under the RRRR Act. Requiring prior announcement of abandonment plans would also allow time for adjustment. Plants and workers could be slowly phased out, alternative transport modes sought, and political support for public subsidy determined. If Federal subsidies were found necessary and desirable, they could be provided on a matching (or other sharing) basis.

To encourage efficiency, the availability of Federal funds could be contingent on holding competitive service auctions in which service contracts are granted to firms requiring the smallest total subsidy. Such plans have been proposed to provide airline service to small communities. The CAB staff report on small community service recommended experimentation with a "low bid system." [48] Under this proposal subsidized service would have been provided in selected low density city-pair markets.[49] Minimum service quality would be specified and rates would be fixed for a time to be determined by rulemaking.[50] Significantly, local community matching funds would be required at an increasing rate, over time. This plus limitations on maximum subsidized service would have placed a ceiling on subsidy costs. Procurement would have been by low-bid without CAB hearings.[51]

Recently, the Civil Aeronautics Board staff renewed proposals for a contract subsidy program.[52] Subsidy amounts would be based on the estimated cost of commuter airlines provision of specified amounts and types of service,[53] not on the actual costs of providing service. This would tend to prompt efficiency, and reduce perverse incentives to expand service amounts and "quality." There would be some risk that differential costs would not be duly recognized, but eliminating carrier influence over the subsidy amount appears vital. Carriers would be selected in a two-tier solicitation system.[54] First, solicitation would be open to carriers serving that certain community, points in the same state, or the relevant "hub" airport.[55] The second round would include solicitation by any qualified carrier. This would not necessarily result in minimum cost but would give some preference to carriers with experience in dealing with local market conditions. It is not clear why the expected ability of such carriers to achieve low bids would not result in the due degree of "preference" under a low-bid procurement system. But low bid systems were reportedly considered undesirable by 98 percent of those commenting to the CAB.[56] Commuter airlines, who were prominent among those commenting, may have feared losses to larger carriers under a low-bid system. And local community officials may have been concerned about service deterioration.

Potential selection criteria would have included FAA safety approval, experience in operation, and extent of operation in the region.

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[48] CAB, "Report of Working Group on Small Community Service," Appendix B "A Proposal for a Low-Bid Procurement System."
[49] Ibid., pp. 21–23.
[50] Ibid., p. 23.
[51] Ibid., p. 25.
[52] CAB, "Small Community Service—A Subsidy," processed, updated. Obtained from CAB staff at meeting with Committee staff on Mar. 9, 1977.
[53] Ibid., "Attachment," p. 1.
[54] "Small Community Service/Subsidy," op. cit., p. 2.
[55] Ibid.
[56] Meeting with CAB Congressional Relations and Bureau of Operating Rights Staff, Mar. 9, 1977.

CAB staff indicated that in seven years this program could reduce annual subsidy costs from $40 million to $18 million. Much of this saving would result from basing subsidies on the costs of providing the specified service and not on the "system need" for revenues of the local service carriers. Essentially this is the approach of the recently adopted "Airline Deregulation Act of 1978." While continuing the previous subsidy program for a term of years, the statute authorizes that new programs will be based on community, rather than carrier, needs.[57]

Loss of scheduled air service is not likely to result in widespread or severe community disasters; if it were, local groups would have strong incentives to provide subsidy. But some shifts, such as losses of plants, may cause severe impacts. In such cases adjustment assistance may be appropriate. As noted above, the Trade Act of 1974 provides for such assistance to communities. Another precedent is found in the Department of Defense's program to assist communities affected by the closing of a military installation.[58] Established in 1970, the program's intent is stated as ". . . to utilize state and local resources, in addition to federal resources, to create new private sector jobs and to reduce the community's dependence on Defense activities."[59] As DOD concluded, base closing can have severe community impacts:

> Between 1971 and 1974, 124,000 defense jobs were lost through base closings. Only about half of 51,000 workers who had lost their jobs during the two years ending in October 1975 had found new employment by the end of that period. The communities involved still suffered from depressed real estate markets, high unemployment, and low retail sales two years after those base closings. Some communities have made a successful conversion to a civilian economy, and at least some declare they will be better off in the long run. Nonetheless, the three-inch-thick final environmental impact statement prepared by the Air Force for a proposed military base reduction involving inactivation of a bombardment wing (with its supporting operations and maintenance squadrons) estimated the following initial effects, the loss of 62 percent of the military and civilian employees at the base would reduce population in the impact area by 20 percent; one community in the area would lose 65 percent of its population. A drop in retail sales of 6.5 percent would be expected, with a sales tax loss of $346,000. The housing market would be affected severely with a rise in the vacancy rate from 3 percent of 14.5 percent and the unemployment rate would rise from 12.2 to 22 percent.[60]

Between March 1970 and March 1973 the interdepartmental economic adjustment committee established by the President aided seventy impacted communities in thirty-four states and Puerto Rico. From 1975 through 1977 forty-one projects were funded in twenty states and Puerto Rico. Total funding rose from $28.4 million in FY 1973 to $114.1 million in FY 1976. Much of the defense spending component was spent in reducing losses from the disposal of homes of military and civilian personnel. This spending is perhaps more in the nature of compensation than adjustment assistance per se. Non-defense agencies have provided $335 million, 60 percent of which has gone for capital improvements and 19 percent for business develop-

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[57] Pub. L. 95–504, 95th Cong., 2d sess. (1978).

[58] American Enterprise Institute, "Military Base Closings: Benefits for Community Adjustment," Washington, D.C.: American Enterprise Institute, December 1977, p. 5.

[59] Department of Defense fact sheet of December 1975, enclosure to letter to Chairman John C. Stennis of the Senate Committee on Armed Services from Major General Ralph J. Maglione, director, Legislative Liaison, Department of the Air Force, Mar. 10, 1976. Cited in Ibid., p. 5.

[60] Ibid., p. 3 (footnotes deleted).

ment.[61] Legislation was considered in the 95th Congress to expand and formalize the aid process.[62] The rationale for such assistance appears generally sound in that base closings are distinct and identifiable government decisions undertaken to yield public benefits and many of the effects can be clearly identified. Attributing community harm to regulatory impacts would often be more difficult. Extension of assistance to the regulatory areas could lead to extended debate over just what, for example, "caused the plant to close." Considering business concern with regulatory compliance costs, there would probably be numerous specious claims.

However, if assistance is available, communities might be less likely to resist base closings—or in the regulatory arena, oppose or impede changes—and pending legislation would earmark 10 percent of the estimated defense savings over a ten year period for community assistance.[63] This might lower resistance to closings but would also make having a base a less risky proposition and could increase pressures for irrational and uneconomic patterns of base location. As with all compensation systems such resistance can reduce incentives speedily to adjust and increase the cost of regulatory changes.

Gradual movement toward a new regulatory environment would eliminate or reduce many problems. In the economic arena, allowing a widening band of price flexibility would slowly confront small communities with rising rates. This would signal alternative suppliers that market entry might become profitable. Impacted employers would contract more slowly and worker and civic adjustment would be eased.

I. Anti-Trust Policy During the Transition to New Arrangements

To a noteworthy extent, the regulated industries have been exempted from anti-trust laws on the theory that regulation takes the place of competition. In the event of either deregulation or significant relaxation of regulation controls, the anti-trust laws would assume a far more prominent role in those areas.[64] The major thrust of return of economic regulation is to allow competitive forces to impose low costs and eliminate excessive profits. A pre-eminent purpose of anti-trust laws is to maintain such an environment by ensuring competitive behavior. Thus deregulation would impose greater responsibility on anti-trust enforcement, and both the FTC and the Justice Department's Antitrust Division would require increased staff and budgets.

For example, one of the most potentially significant changes following full or partial deregulation would be the repeal of the Reed-Bulwinkle Act, which now exempts transportation rate bureaus from antitrust restraints. That would follow, because it would certainly be inconsistent to eliminate regulatory rate controls, but allow competing carriers to continue to agree among themselves on rates.

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[61] Ibid., p. 5

[62] The bills include S. 1901 introduced by Senators Griffin and Riegle. The legislation was not adopted.

[63] Loc cit., p. 11.

[64] This is not to say that anti-trust monitoring intervention and enforcement is not appropriate under present arrangements. Though constrained by exemptions, antitrust can help to limit agency protectionist tendencies. The Federal Trade Commission and the Antitrust Division of the Department of Justice have active programs of intervention before agencies including the ICC, CAB, and FMC.

Anti-trust could play a major role in preventing predatory pricing or highly concentrated industries,[65] about which some critics of deregulation have expressed concerns. Yet neither result appears likely. Predation is generally not a rational policy if easy entry exists, because it involves the predatory firm in sustaining present losses in exchange for future profits; since entry is easy, such prospective profits usually will not be sufficiently great to justify initial losses. Predation would be particularly unlikely in an unregulated trucking or airline industry where the intended victim could simply shift to other routes while the predatory prices prevailed and shift back whenever they ended. Even if a predatory policy is adopted in spite of its self-defeating nature, the antitrust laws would be available as a remedy.

The prospect of large increases in concentration also seems remote, provided that the deregulated industries are subject to the merger laws, which are very stringent today with respect to horizontal acquisitions among competing firms. Mergers among any of the trunk airlines would probably be illegal as would mergers between major competing truckers. In the absence of horizontal mergers and with few advantages to be gained from large size, it is improbable than any important increase in concentration in the airline or truck-load-lot trucking industry would occur.

However, there are advantages of large size in the terminal operations of less-than-truckload motor carriers. Even if mergers were to be prevented in those areas, some increase in concentration could still result from ordinary competition. And that may not be undesirable if lower cost and prices occur. Should that happen, entry would still be generally easy so any concentrated parts of the trucking industry would not have much market power. By contrast, there can be no doubt that present truck rates, mutually agreed upon among carriers and subject to ICC enforcement, may involve monopoly pricing.

Conglomerate or vertical expansions might be of some concern though it is not apparent that deregulation would move them more likely. Deregulation could lessen tendencies for airlines to engage in conglomerate acquisitions because, with entry restrictions relaxed, lines might find it easier to invest capital in their primary industries. But the overall effect will depend on the expected risk and profitability of investment in airlines. These effects will differ among lines. And vertical mergers—such as an airline acquisition of an aircraft manufacturer—would continue to be of concern just as at present.

J. Monitoring the Impact of New Regulatory Arrangements

As previously discussed, substantial fears as well as real and imagined uncertainties surround most significant regulatory changes. Small communities are concerned about loss of air and freight service, and carriers with a vested interest in existing arrangements play upon these fears. There is also substantial uncertainty about future industry structure and performance under the new arrangements. Will competition be active among firms long accustomed to cooperation? Absent regulatory protections, will consumers function effectively in the new

[65] American Trucking Associations, "Transportation—Regulation or Disaster?" Washington, D.C., undated, p. 6.

environment? So too, much of the effectiveness and cost of new health, safety and environmental approaches are uncertain and merit scrutiny. To some extent, government must monitor the impact of new regulatory arrangements particularly during transition stages.

Preferably, such monitoring should not exclusively be the responsibility of the original regulatory commission: the staffs of particularly industry-specific commissions may identify with and have some degree of vested interest in the older regulatory arrangements. On the other hand, the commissions (and other regulatory bodies) generally have substantial industry expertise, and so should play a role.

The Justice Department's Antitrust Division and the Federal Trade Commission also will have a role, since both have well established experience and capability in the areas of competitive effects and consumer protection.

Alternatively, monitoring might be done, at least in part, by an independent body, which could be established by legislation. Some advantages would accrue from having one group monitor impacts in a variety of areas: many of the issues—competition, discrimination, service adequacy—are similar. But it is difficult to believe that one agency could effectively deal with detailed substantive problems in fields as diverse as occupational safety and health and motor carrier regulation.

Whatever the institutional structure and location of the monitoring effort, it must be based on detailed understanding of the affected industries and activities. By the nature of their tasks, the monitors must have access to accurate and current data, and so should have appropriate investigative powers as well as resources to gather and process information. By statute, monitors could be authorized to intervene in proceedings.

Periodic or continuing monitoring of the effects of new arrangements may be a key defense against the establishment of new vested interests and socially useless regulations. As discussed above, changing circumstances have frequently altered the appropriateness and effects of regulations. Monitoring coupled with vigorous Congressional oversight could help alleviate such problems.

The monitors should also address efficacy of achieving regulatory goals and the ongoing appropriateness of these goals. At intervals the desirability of present arrangements could be evaluated and compared with alternatives.[66]

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[66] See General Accounting Office Effects of Proposed Rules and Legislative Actions on Competition Can Be Analyzed, OPA–758, May 17, 1975.

CHAPTER SEVEN

THE ROLE OF THE ADMINISTRATIVE CONFERENCE IN REFORMING REGULATION*

This chapter discusses the past, present and possible future role for the Administrative Conference of the United States (ACUS) in contributing to the improvement of the regulatory and administrative process.

The Administrative Conference is a small, independent federal agency created in 1964, and activated in 1968, after many years of experimentation with temporary conferences and study commissions. Its function is to study and make recommendations and to exchange information in order to reduce inefficiency, delay and unfairness in administrative proceedings. It has no ongoing operating program of fixed dimensions other than to "study the efficiency, adequacy, and fairness of the administrative procedure used by administrative agencies in carrying out administrative programs." [1] It was intended to serve for federal administrative agencies functions similar to those provided for the court system by the Judicial Conference.

The Administrative Conference has made useful and significant contributions to administrative practice and procedure over the past ten years. It has supported and sponsored research projects on a wide variety of significant issues; it has adopted over 70 formal sets of recommendations, many of which have been implemented by administrative bodies; and, in addition to its general responsibilities under the Administrative Conference Act, it has been specifically directed by Congress to contribute to the implementation of the Government in the Sunshine Act, the Railroad Revitalization and Regulatory Reform Act (RRRR) and the Magnuson-Moss FTC Improvements Act.

ACUS also has responsibility for providing advice to agencies, commenting on legislation, following up on implementation of its recommendations, and serving as a clearing house for information and statistics about agency functions and procedures.

The Administrative Conference is unique in its composition: it is headed by a full-time Chairman, who is appointed by the President with Senate confirmation for a five-year term, and by a ten-member Council appointed by the President for three-year terms and drawn in part from Federal agencies and in part from private life. Its membership also includes 44 high-level representatives designated by 38 major departments and agencies of the Federal Government, and 36 "public members," citizens from outside the Federal Government who are specifically informed with respect to administrative procedure. The Government members are assured a small numerical predominance, but

*This chapter was prepared by Theodore J. Jacobs, Committee counsel.
[1] 5 U.S.C. 574(1).

the Conference has participation from private practitioners, academics, state officials and others.

The method of operation of the Conference is also unique. The members, other than the Chairman, serve without compensation beyond their regular full-time Government or private endeavors. The membership, known as the Assembly, meets in plenary session at least once and usually twice a year, and conducts its business much like a legislative body. Proposals are referred to the Assembly for action from the Conference's Committees. Each Conference member is assigned to one of the nine standing committees. Committee activities are supported by a small, full-time staff in the Office of the Chairman and by part-time consultants, drawn mostly from law school faculties, who largely engage in the in-depth studies which form the basis of Conference recommendations.

Although the statute creating the Conference broadly empowers it to "study the efficiency, adequacy and fairness of the administrative procedure used by administrative agencies," the Conference appears to have interpreted its role narrowly. For the most part, it has avoided controversy with the agencies and involvement with issues other than those lending themselves to academic legal studies. With very few exceptions, it has not reached out to review and examine the management problems of administrative agencies although it has had the power if not the expertise to do so. It has not taken an activist posture in dealing with some of the persistent problems of regulatory agency procedure and management, again in spite of the fact that it is not without power to examine issues and to take stands far beyond the confines of its chosen activities. The legislative structure of the Conference has sometimes proven to be cumbersome and unwieldy and has contributed to its caution and timidity. At the same time, the character of its membership, its deliberate pace and the process of obtaining consensus has helped to give greater acceptance to the Conference's recommendations.

It is our view that, within the confines of its chosen role, the Conference has performed adequately. It has done so under severely restrictive resource limitations, and, in some measure, its failure to adopt a more activist posture may be attributable to a very limited budget. At minimum, we endorse the continued role of the Conference under its present mandate and structure, but with significantly greater resources.

However, we recommend that the Administrative Conference be expanded to enable it to play a broadened role in dealing with problems of inefficiency, delay, complexity and burdensomeness detailed in the six volumes of this Committee's Study on Federal Regulation. It should have as a component part an office of research which would continue to perform the research, advisory, statistical and educational functions now conducted by ACUS.

It should also be authorized to issue guidelines for the significant body of laws of general application which comprise the framework of federal administrative law. These laws, which include the Administrative Procedure Act, the Federal Advisory Committee Act, the Freedom of Information Act, the Privacy Act of 1974 and the Government in the Sunshine Act[2] apply to all executive and independent agencies.

[2] This group should also include any legislation resulting from the studies conducted by the Commission on Federal Paperwork and the Privacy Protection Study Commission. See below for more extensive discussion of this issue.

These laws have common goals and objectives—fairness in administrative practice and insuring open government and availability of government information. They also impact on management of agency procedures and on reducing paperwork. At present, the Office of Management and Budget has responsibility for issuing guidelines with respect to some of these laws; in the case of others, no agency has this responsibility. Yet interpretations and definitions under one law often impact on other laws in this group and coordination among them is necessary. For these reasons, we recommend that ACUS be given authority to issue guidelines for implementation of these laws with respect to all federal executive and regulatory agencies and programs. This will require amendment of some of the laws, each of which are discussed in detail in this chapter.

In addition, ACUS should be responsible for coordinating and implementing regulatory management and procedural policy. It should also continue to review and advise agencies generally with respect to such activities as the development of regulations (including pre-rulemaking and program planning), licensing, ratemaking, handling information, adjudication, program enforcement, dispensing grants and benefits, handling complaints, paperwork reduction, interaction with state regulatory programs, caseload management, court litigation, and some aspects of personnel management (including training).

In the legislative field, the organization should provide advice and assistance with proposed legislation and should respond to requests from Congressional committees for studies of agency performance and should perform reviews of existing regulatory legislation.

This Committee has been engaged in an extensive study of Federal Regulation throughout the 95th Congress. In the five volumes published to date, there are dozens of findings and recommendations requiring continued supervision and guidance by a body such as a revitalized Administrative Conference. For example, the Committee's Study on Delay in the Regulatory Process (volume 4) cited inadequate management, lack of planning, and failures in priority setting as principal causes of excessive delay in regulatory proceedings. It recommended that agencies should be authorized and encouraged to make greater use of informal rulemaking procedures and that agencies should establish and enforce deadlines for various stages of proceedings. It also recommended that agencies should establish planning and management units to collect information and perform analysis required for informed policymaking. While some of these recommendations require legislation (and in fact S. 2490 was introduced in the 95th Congress to bring about these changes), an agency such as the Administrative Conference can contribute substantially to the continued study, analysis and implementation of these new procedures. In volume III of our study, "Public Participation in Regulatory Agency Proceedings", we dealt with administrative and procedural barriers to public participation and made recommendations to expand the role of affected individuals and groups in the regulatory process. We also called for greater clarity and simplicity in the language of regulations, and recommended a periodic review of all agency regulations. Some of these recommendations have been incorporated into

the President's Executive Order 12044. Others can benefit from sustained and continuous oversight by an agency such as an expanded Administrative Conference.

In order to carry out the expanded responsibilities suggested above and discussed at greater length at the end of this chapter, we have concluded that a restructured Administrative Conference should be given these duties. Such an agency must necessarily have a structure more suited to solving problems instead of the present structure of ACUS which is designed for studying and recommending. The present structure of the Administrative Conference is more appropriate for a research organization than a body charged with important oversight or monitoring functions. Thus, the first step should be a re-examination of the structure and focus of the Conference to determine what statutory changes are necessary to an expanded role. That will necessarily include a review of Conference staff and budget needs.

We believe a leadership role for the Administrative Conference is not assisted by a governing board composed of not less than 75 members, many of whom are officials of the regulatory agencies. A more effective organizational structure is clearly warranted for the envisioned new tasks. We recommend that the Conference be headed by a single administrator, nominated by the President and confirmed by the Senate. On the issues of appointment, tenure and removal of the Administrator, there should be sufficient independence to enable ACUS to provide guidance to the independent regulatory commissions. The membership body itself should be sharply reduced in size and reconstituted as an advisory committee to the administrator. An advisory committee, consisting of perhaps 11 members, should be appointed by the President with Senate confirmation. Thus streamlined, and with appropriate additional resources, the Administrative Conference would be equipped to assume major responsibilities for improving the regulatory process.

A. The Administrative Conference of the United States

1. History

The origins of the Administrative Conference of the United States predate its founding in 1964. As early as 1936, it has become clear that there was a need to make systematic and informed recommendations to improve the administrative organization and performance of departments, agencies, and independent commissions of government. For years, there was support for a permanent organization with responsibility on a continuing basis to make studies and analyses designed to lead to administrative improvements.

Among the earliest of such efforts was the appointment of the Committee on Administrative Management by President Roosevelt on March 20, 1936, known as the Brownlow Committee (after its Chairman, Louis Brownlow.) The Committee was directed to study the organization and administrative management of the Executive branch of the Government. Among its conclusions was the recommendation to establish a continuing "special agency:"

> The President needs a research agency to investigate the broad problems involved in the administrative management

> of the government—problems of administrative organization, finance, coordination, procedures and methods of work, and the many technical aspects of management. The function of investigation and research into administrative problems should be developed as an aid to overall executive management.

In 1939, at the suggestion of the Attorney General, President Roosevelt requested the appointment of a committee to make a thorough and comprehensive study of "the need for procedural reform in the field of administrative law." This committee, the first to focus exclusively on administrative legal procedures, made a number of recommendations and drafted legislation in order to, among other things,

> . . . create an Office of Federal Administrative Procedure to study and coordinate administrative procedures, and in general through continuing studies and periodical recommendations, to achieve and stimulate practical improvements in a manner not possible through omnibus legislation.

The Committee report stated that

> . . . it should be the major function of the Director (of the Office of Federal Administrative Procedure) to examine critically the procedures and practices of the agencies which may bear strengthening or standardizing, to receive suggestions and criticisms from all sources, and to collect and collate information concerning administrative practice and procedure.

The Committee noted that recurring problems had been addressed by each agency without reference to the experience of other agencies, thus fostering separate bodies of law and public confusion and skepticism. Among the suggestions of the Attorney General's Committee on Administrative Procedure were methods to improve the rulemaking process by emphasizing the importance of outside participation prior to the issuance of rules and by providing a method for timely objection by private interests. Also, the Committee suggested improvements to insure a more uniformly high quality of hearing officers by the creation of "hearing commissioners" with tenure, substantial salaries, full power to control and conduct hearings, and authority to issue decisions of a considerable degree of finality. The report of the Attorney General's Committee on Administrative Procedure laid the foundation for enactment of the Administrative Procedure Act in 1946. While the Act embodied most of the recommendations of the Committee, it did not establish the proposed Office of Federal Administrative Procedure.

The next major effort to improve the administration of the Federal government generally was the 1947 establishment by Congress of the U.S. Commission on Organization of the Executive Branch of the Government. Known as the Hoover Commission, this two-year study submitted to Congress a total of 19 reports and 78 task force studies relating to the organization and management of the entire executive branch. In one task force report, a familiar suggestion was again made:

> Our investigation has convinced us, however, that more is required than an overhaul of the commissions at infrequent intervals. What is needed is continuous analysis of their or-

ganization and operations in order to promote more efficient administration.

This has led us to the conclusion that a special office should be established and maintained to study and report on the operations and organizations of these administrative regulatory agencies. Their problems are sufficiently different from those of the regular executive agencies to require separate examination and the problems of the various regulatory agencies are similar enough to make their experience helpful to each other.

Although the Hoover Commission's 1949 report generated hundreds of bills, no action was taken on the special office idea.

In 1951, the Judicial Conference of the United States studied time-saving procedures in the regulatory process. The Judicial Conference adopted the following recommendation:

> That the Judicial Conference suggest to the President that he call a conference of representatives of the administrative agencies for the purpose of devising ways and means for the elimination of unnecessary delay, expense, and volume of record in administrative proceedings; and that in any conference which may be called by the President, . . . representatives of the bench and bar be included in such numbers and capacities as to him may seem appropriate.

In response to a letter from Chief Justice Vinson detailing the recommendations of the Conference, President Eisenhower released a memorandum to all Executive Departments and Administrative Agencies calling for a conference of representatives of these agencies, the judiciary and the bar. The President stated:

> It is not contemplated that the conference will attempt to impose rules or procedures upon the departments, the agencies, or litigants. The purpose is to exchange information, experience and suggestions and so to evolve by cooperative effort principles which may be applied and steps which may be taken severally by the departments and agencies toward the end that the administrative process may be improved to the benefit of all.

After 2 years, a total of 35 Conference Recommendations were adopted. The Conference's first recommendation to the President contained the following:

> 1. OFFICE OF ADMINISTRATIVE PROCEDURE. The Conference recommends to the President of the United States the establishment of an Office of Administrative Procedures, and that provision be made:
>
> (a) That the Office perform the following functions:
>
> (i) carry on continuous studies of the adequacy of the procedures by which Federal agencies determine the rights, duties, and privileges of persons;
>
> (ii) initiate cooperative effort among the agencies and their respective bars to develop and adopt as far as practicable, uniform rules of practice and procedure;

(iii) collect and publish facts and statistics concerning the procedures of the agencies;

(iv) assist agencies and this Conference in the formulation and improvement of their administrative procedures.

(b) That the Office be established in the Department of Justice under the supervision of the Attorney General.

* * * * * * *

(e) That the Director make appropriate arrangements for securing the advice of representatives of the agencies, the bar, and the other interested persons, in connection with the performance of his duties.

(f) That it be the duty of each agency promptly to furnish to the Director all information on its administrative procedures which he may request and to assist him by all appropriate means.

In his State of the Union message on February 2, 1953, President Eisenhower announced his establishment of an advisory Committee on Government Organization, known as the second Hoover Commission, which would use as its point of departure the reports of the first Hoover Commission. One of the Commission's task forces studied legal services and procedure. Among its recommendations:

> An Office of Legal Services and Procedure should be established within the Department of Justice to assist agencies in simplifying, clarifying and making uniform rules of substances and procedure, to insure agency compliance with statutory public information requirements; and to receive and investigate complaints regarding legal procedures and report thereon to the authorities concerned.

Nearly two decades of recommendations began to come to fruition on February 6, 1957, when Attorney General Brownell ordered the establishment of an Office of Administrative Procedure. The Office was small and tentative in nature. It survived for three years, issuing three annual reports (1957–59). Lacking adequate resources, the office devoted most of its time to compiling statistics and preparing comments on legislation and was thus unable to assume the capacity that had been envisioned by those who advocated its establishment.

During the latter part of the Eisenhower Administration, there was increasing support for the creation of a continuing conference on administrative procedure. On August 25, 1960, the Chairmen of six independent regulatory commissions jointly wrote President Eisenhower calling attention to "growing public concern over the cumbersome procedures, unnecessary expense, and the delays which have been steadily increasing in some of the procedures of the administrative agencies." The letter suggested the establishment of another "President's Conference on Administrative Procedure" whose chief purpose would include consideration of the establishment of a permanent conference. On August 29, 1960, President Eisenhower ordered the establishment of another such conference.

Immediately after his election, President-elect Kennedy requested James M. Landis to prepare a report on the problems of regulatory agencies. Landis noted the progress which had been made toward the establishment of the second conference and suggested that Kennedy

> . . . (p)romote the organization of the Administrative Conference of the United States and subject to the approval of its by-laws initially by executive order and subsequently by legislation provide for creation of a Secretariat to the Conference, transferring to that Secretariat duties now performed by the Office of Administrative Procedure within the Department of Justice, which would thus be abolished. . . .

On April 13, 1961, President Kennedy issued an Executive Order establishing the second temporary Administrative Conference of the United States. The Conference met in six plenary sessions and adopted thirty recommendations. The final report was submitted to the President by Judge Prettyman, Chairman of the Conference. Judge Prettyman's December 17 report is regarded as the blue-print for the present Administrative Conference.

With President Kennedy's support of the Prettyman proposal, the movement towards the establishment of a permanent organization quickened. The Bureau of the Budget drafted a bill following the suggestions of Judge Prettyman's report. The bill was introduced in 1963 and was enacted on August 20, 1964.[3] The bill was strongly supported by government agencies and departments, by the bar associations, and by the Judicial Conference; the Congress was advised of no opposition.

After a three-and-a-half-year delay pending appointment of a Chairman of the Conference, Jerre S. Williams of the University of Texas Law School was nominated, confirmed, and took office in January 1968. By May of 1968, the Conference had been organized and had held its first plenary session.

This history demonstrates a continuing belief by many leading practitioners and academics that there is something useful to be gained by focusing on procedural issues by a group consisting in part of practitioners, in part agency officials and in part academics. It also illustrates that there are common procedural problems applicable to all agencies dealing with regulation and administrative practice and procedure. These common problems lend themselves to solution, it has been thought, when consensus among the various groups interested in administrative law can be reached. It has also been thought that permanence is needed to insure the capability of following up on recommendations.

The history of the Administrative Conference illustrates its strong legal bias in composition and outlook. Until recently few groups other than lawyers and government officials had any real interest in federal regulation. Given this history, the Administrative Conference naturally focused on problems of legal procedure. It has not been concerned with management problems of regulatory agencies because these problems have only recently become the focus of attention. However, in any future restructuring of the agency it will be

[3] Public Law 88–499, 5 U.S.C. 571 et. seq.

necessary to include disciplines other than the legal profession if the agency is expected to be in a position to deal with management and economic issues.

2. Organization

(a) The Chairman

The Chairman of the Administrative Conference is appointed by the President, with the advice and consent of the Senate, for a five-year term. The Chairman, with the approval of the Council, appoints the public members of the Conference. He presides at plenary sessions of the Assembly and at Council meetings. The Chairman serves as the official spokesman for the Conference in relations with the President, the Congress, the Judiciary, the agencies and the public. He also has authority to investigate matters brought to his attention by individuals inside and outside Government, to designate subjects for Conference study, and to seek implementation of Conference recommendations. The Chairman has a small permanent staff whose principal duties are to furnish administrative and research support to the Assembly and Committees of the Conference, to follow and assist in the work of consultants, and to help the Chairman in securing implementation of recommendations and in providing advice and assistance to the agencies and to Congressional Committees. The Conference's small professional staff is attached to the Office of the Chairman. Much of their efforts are directed to preparation for the work of the Council, the Committees and the Conference.

(b) The Council

The Council consists of the Chairman and ten other members who are appointed by the President to serve three-year terms, and of whom not more than one-half may be drawn from Federal agencies. The Council has authority to call plenary sessions of the Conference and fix their agendas, to recommend subjects for study, to receive and consider reports and recommendations before they are considered by the Assembly, and to exercise general budgetary and policy supervision.

(c) The Assembly

The Assembly of the Conference is composed of the entire membership, which by statute may not be less than 75 members nor more than 91. The Administrative Conference Act confers membership upon the Chairman of each independent regulatory board or commission, or an individual designated by the board or commission.[4] Under this provision, 14 boards and commissions have statutory members.

The Act also grants membership to the head (or his designee) of each executive department or other administrative agency designated by the President for this purpose.[5] Acting under this authority Presidents have designated all Cabinet departments for membership, and the Council has acted to provide some of them with additional members. Similarly, other administrative agencies have been designated for membership by the President.

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[4] 5 U.S.C. § 573(b)(2).
[5] 5 U.S.C. § 573(b)(3).

The final group of Conference members are members of the public, appointed by the Chairman, with the approval of the Council, for two-year terms. These members must comprise not less than one-third nor more than two-fifths of the total membership. This group includes scholars in the field of administrative law, members of the practicing bar and others with a particular expertise in Federal administrative procedure.

In addition, pursuant to Section 4 of the Conference by-laws, the Chairman, with the approval of the Council, may make liaison arrangements with representatives of the Congress, the Judiciary, Federal agencies and professional associations not represented on the Conference.

(*d*) *The committees*

The by-laws of the Conference have established nine standing committees. These committees meet periodically to plan and guide research by academic consultants and by the Conference's professional staff, and on the basis of such research to frame proposed recommendations for consideration by the Assembly. When a study and tentative recommendation have been prepared, they are circulated to the affected agencies for comment and re-examined by the Committee in light of the replies. After final committee approval, a proposed recommendation is transmitted to the Council and then to the Assembly for final action in plenary session.

(*e*) *Consultants*

In practice, many of the Conference's studies have been conducted by consultants who have often been law professors. Their papers have usually been research studies of administrative law topics. The customary procedure has been for a subject for research to be assigned by a Committee or the staff to a consultant, who works closely with the staff, prepares a report and recommendations for the Committee and ultimately the Conference.

3. Summary of conference activities

(*a*) *Research*

Given the large number and wide variety of functions performed by the Federal agencies, the increasing complexity of many of these functions, and growing concerns about the cost, responsiveness, competence, efficiency, and fairness of Federal agency performance, there is an increasing need for deliberate, informed assessment of the organization and administrative procedures of Federal agencies. The Committees of the Conference have responsibility for formulating and presenting to the full Conference proposed recommendations designed to improve agency performance. However, before a proposal is formulated and placed on the Conference's plenary session agenda for action, a report is prepared for and considered by a committee of the Conference. Research is thus the foundation upon which committee proposals and full Conference actions rest. The development and management of that research is a major responsibility of the Office of the Chairman.

The research function can address various aspects of administrative procedure. First, it can provide continuous scrutiny of the implementation by Federal departments and agencies of a growing body of

statutory provisions and judicial decisions of general application, which collectively form the framework of Federal administrative law. Indeed, the Conference has concentrated much of its efforts on the procedures provided in the Administrative Procedure Act. Many of its research projects and the recommendations to which they have led have been focused on general issues related to procedures for agency rule-making and adjudication and to procedures pertaining to judicial review of agency action. The Office of the Chairman has also completed an interpretive guide to the Government in the Sunshine Act, growing out of its special consultative role established in that Act to review proposed regulations.

The research function can also address procedural areas and issues of general significance. For example, in September 1977, the Conference addressed the question of what restrictions should be placed on ex parte communications in informal rule-makings pursuant to the Administrative Procedure Act.

Another aspect of the research function is the examination by means of procedural or management audits of the whole range of procedures of a given single agency, or of a category of an agency's proceedings. Such an approach would be empirical and practical, examining the day-to-day workings of the agency and the broad structure of its procedures. The Internal Revenue Service project is a good example of this type of research approach. The study was actually a procedural audit of the IRS, with emphasis on procedures affecting individual taxpayers. The study examined not only the Service's procedures as prescribed by the Internal Revenue Code and by regulations and manuals of the Service, but also experience with those procedures and the undocumented practices of the Service as revealed by interviews with IRS personnel and with taxpayers. The study culminated in 72 recommendations and has catalyzed many improvements in IRS procedures.

Similarly, the Magnuson-Moss FTC Improvement Act (Public Law 93–637) mandated an Administrative Conference study, empirical in its nature, but narrower in scope than the IRS study. The 1975 Magnuson-Moss Act established "hybrid" procedures for developing the FTC's trade regulation rules, and directed the Administrative Conference to study the new rulemaking procedures and report to Congress. (§ 202(d), as amended by Public Law 94–299, § 2). Professor Barry Boyer, Associate Dean of the law school of the State University of New York, heads a consulting team that is conducting the empirical study called for by this legislation. This study is largely empirical, involving interviews, direct observation, use of questionnaire surveys and analysis of administrative dockets. More than 70 percent of the entire Conference research budget for fiscal year 1977 was committed to this project.

(*b*) *Consultation*

The Administrative Conference Act specifically contemplates a role for the Conference in advising agencies and arranging for the interchange of information among them on matters of administrative procedure.[6] This role includes furnishing advice and assistance to Con-

[6] 5 U.S.C. § 574(2), 575(c)(14).

gress. Several examples of the consultation function are illustrative. The Conference prepared a detailed analysis of the procedural aspects of the Consumer Product Safety Act for the Office of Management and Budget. At the request of the Department of Justice, the Conference examined the appeals procedures of the Board of Immigration Appeals. The Conference has provided advice to the Occupational Safety and Health Review Commission on expediting the disposition of cases. In addition, the staff of the Chairman's Office is continually consulted on an informal basis by members of agency legal staffs.

Congress, on several occasions, has specifically directed the Conference to perform consultative services for the agencies. For example, the Government in the Sunshine Act required the 47 agencies affected by the Act's open meeting requirements to consult with the Office of the Chairman in the preparation of their regulations.

Similarly, the Railroad Revitalization and Regulatory Reform Act of 1976, which provided for fundamental changes in the ICC's procedures for railroad regulation, directed the ICC to propose and submit to Congress detailed rules of practice governing adjudicatory and rulemaking proceedings under the Act. The Administrative Conference was directed to present to Congress and the Commission its views on the proposed procedural rules.

In this advisory and consultative function, the Chairman's office is frequently called upon to participate in inter-agency task forces and groups working on particular problems. For example, in 1976 and 1977 the Conference was represented in the Chairman's Task Force on Procedural Review of the National Labor Relations Board. Similarly, one senior attorney at the Conference served as cochairman of the Presidential Task Force on Procedural Review.

Finally, the Conference often comments on the procedural aspects of legislation at the request of Congressional committees and the Office of Management and Budget. Examples of this aspect of the consultative function are the preparation of testimony and extensive staff consultation with the Senate and House Judiciary Committees on Amendments to the Administrative Procedure Act. The Conference has also worked with this Committee on the Government in the Sunshine Act.

(*c*) *Education and clearinghouse*

Closely related to the consultative function of the Administrative Conference is its role in educating regulators on aspects of administrative procedure and management.

In 1974, the Conference published a Manual for Administrative Law Judges. The Manual discussed modern procedural devices and techniques used in the various agencies and contained suggestions for more efficient and effective use of pretrail procedures, exchange and presentation of written evidence, methods of shortening and simplifying formal hearings, treatment of intervenors and non-party participants, techniques of presiding, preparation of written opinions and standards of conduct for presiding officers. The Manual has been a useful tool for Administrative Law Judges as well as private attorneys and those who preside and appear in all formal proceedings conducted in Federal, State and local administrative agencies.

A current program undertaken by the Conference is the Regulatory Agency Management Seminar (RAMS). This program evolved from consideration by the Conference's Committee on Agency Orga-

nization and Personnel of a study which noted the need for special orientation efforts for new chairmen and members of multimember agencies. In October 1977, fourteen newly-appointed chairmen and members of the independent Federal regulatory agencies attended the first RAMS seminar.

In addition to these government-wide educational activities, the Conference has conducted and participated in seminars and other training programs for legal staffs of individual agencies, including the Environmental Protection Agency, the Consumer Product Safety Commission, the Federal Trade Commission and the Equal Employment Opportunity Commission.

An integral part of the education function is the Conference's role as a clearinghouse of information. The Conference is charged with the responsibility to "arrange for the interchange among administrative agencies of information potentially useful in improving administrative procedures." [7]

(*d*) *Statistical compilation*

The Administrative Conference Act specifically calls on the Conference to "collect information and statistics from administrative agencies and publish such reports as it considers useful for evaluating and improving administrative procedures." [8] Pursuant to this charge, the Conference has instituted a Uniform Caseload Accounting system (UCAS) for collecting and publishing certain uniform statistical data relative to all formal adjudicative proceedings over which administrative law judges preside. At present, only the 1975 Statistical Report is available. The report is a survey of the caseload of all agencies employing at least one administrative law judge.

One potential accomplishment of the statistical compilation function is to induce each individual agency to monitor its own performance and operating capacity. However, the Conference's data collection function has been hampered by the fact that agencies have failed to gather information systematically on time spent on various types of proceedings. Also, agencies gather and assemble information in an inconsistent fashion, making comparability virtually impossible and ACUS has no power to require agencies to comply with its requests. S. 2490, the "Regulatory Procedures Reform Act," attempts to remedy some of these failures by requiring agencies to compile information about agency proceedings in a systematic way. It also gives ACUS statutory authority to gain access to such records, information and analysis that the Conference requires to carry out its responsibilities under the Act.

Although some of the data collected by ACUS has been used on occasion,[9] much of it has been ignored. This appears to be a result of two major factors. First, collection of raw data, although interesting, is virtually useless unless it serves as the basis for some meaningful interpretation or study and most studies require specific data, tailored to the research project. Second, the absence of Conference staff with a statistical background precludes any sophisticated analysis of the collected data.

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[7] 5 U.S.C. § 574(2).
[8] 5 U.S.C. § 574(3).
[9] *See e.g.*, Senate Committee on Governmental Affairs, Study on Federal Regulation, vol. IV (Delay in the Regulatory Process), 95th Cong., 1st Sess. (1977).

It is our view that statistical data should be collected by an agency such as the ACUS, but its utilization depends upon providing adequate staff resources to put the information to use. It is also necessary to refine the statistical gathering capability to obtain more precise and useful data tailored to the needs of a particular inquiry. It might also be useful to combine the statistical gathering function with research and advisory duties so that the statistical data can become a part of specific recommendations.

(*e*) *Implementation*

An important function of the Office of the Chairman is to secure the implementation of Conference recommendations. The Conference has no authority to require compliance, and therefore, it must seek to achieve voluntary compliance, relying on the persuasiveness of the recommendations themselves. Monitoring compliance requires a substantial time commitment and no comprehensive implementation study has yet been undertaken.

One implementation assessment was completed in 1976. That study evaluated the implementation of 17 broadly applicable recommendations by the independent Federal agencies. Although narrow in scope, the study revealed a high degree of compliance with Conference recommendations. It must be noted, however, that the most important aspect of any implementation study—an evaluation of the impact of recommendations which have been implemented—has not been undertaken by the Conference. Adequate staffing for this type of evaluation is necessary for a proper analysis of the contributions of the Administrative Conference, and adequate resources have never been made available.

(*f*) *Resources*

Almost every aspect of the Conference's work has been severely restricted by lack of funds and personnel. Up until fiscal year 1978–79, the ACUS budget has never exceeded $1 million in a single fiscal year while other research organizations such as the National Science Foundation and the Law Enforcement Assistance Administration expend hundreds of millions. The following table sets forth some information on the Conference's budget over the last 5 years.

Table 7-1. ADMINISTRATIVE CONFERENCE BUDGET AND STAFFING—FISCAL YEARS 1974–78 [1] DETAILED

[Budget figures in thousands]

	1974	1975	1976	1977	1978
Authorization	760	805	850	900	950
Appropriation	700	750	785	880	914
Amount appropriation is below authorization	60	55	65	20	36
Permanent positions	14	14	16	16	17
Personnel compensation (excluding benefits)	352	355	385	395	437
Percent	[1] (65)	(63)	(66)	(63)	(70)
Research (including statistical program and seminars)	185	205	195	321	184
Percent	[1] (35)	(37)	(34)	(37)	(30)
Total for personnel compensation and research	537	560	580	626	621
Total amount for overhead (nonpersonnel compensation and nonresearch)	163	190	195	254	293
Percent of total budget allocated for personnel compensation	50	47.0	50	45	47
Percent of total budget allocated for research	27	27.5	25	26	21
Percent of total budget allocated for overhead	23	25.5	25	29	32

[1] Ratio of compensation to research.

Almost every interested observer agrees that the Conference cannot be expected to assume additional responsibilities without significant additional resource allocations.[10]

The Conference has felt with increasing keenness the constraints of the statutory ceiling on its appropriations. An amendment enacted in 1972 established authorizations for the five-year period 1974–1978, with a maximum authorization of $950,000 for fiscal 1978. Legislation to raise the ceiling has become a first priority of the Conference.

For fiscal years 1979 through 1982, Congress has authorized up to $2,300,000 for the Administrative Conference by 1981. In the report accompanying the bill, the House Judiciary Committee concluded: "That the Conference merits and needs a significantly increased authorization ceiling, and one that can be reasonably expected to keep pace with economic developments over the next few years, is, in the committee's estimation, not subject to serious question. As is pointed out below, the Conference's record of achievement is clear. Its potential for expanded success through additional research and implementation activities is apparent."

B. Recommendations

It is our view that the Administrative Conference has performed adequately, given its limited interpretation of its mandate, its heavy preponderance of legal profession and agency membership, and its severely restricted resources. The statutory requirements for membership in the Council and the Assembly virtually insures heavy agency and legal profession representation. The nature and composition of this membership and a continued lack of sufficient funding has, in practice, restricted the Conference from engaging in interdisciplinary research or empirical studies. The structure of the Conference has also militated in favor of academic, legal studies, and has required the permanent staff in the Office of the Chairman to serve primarily as a Secretariat for the plenary sessions of the Conference. Although the Conference structure has sometimes proven to be cumbersome and unwieldly, it has also been useful in gaining acceptance for the recommendations which emerge.

We recommend that the Conference itself should be reduced in size and reconstituted as an advisory committee to the administrator. We also recommend that ACUS be headed by a single admintrator to provide guidance to the independent regulatory commissions. On the issues of appointment, tenure and removal of the Administrator, there should be sufficient independence to enable the Administrator to provide guidance to the independent regulatory commissions.

This restructured and expanded agency should continue to provide the present research, advisory, statistical, educational, and coordinative responsibilities of the Administrative Conference. But more than that, it should actively monitor the way agencies plan and manage their regulatory responsibilities and propose procedures to improve the effectiveness of agency operations. ACUS should also continue to review and advise agencies generally with respect to such activities as the development of regulations (including pre-rulemaking and program planning), licensing, ratemaking, handling information,

[10] U.S. Senate Subcommittee on Administrative Practice and Procedure, Committee on the Judiciary, Hearings, "Administrative Conference Authorization" 95th Congress, 1st Session, Aug. 2, 1977, p. 29.

adjudication, program enforcement, dispensing grants and benefits, handling complaints, paperwork reduction, interaction with state regulatory programs, caseload management, court litigation, and some aspects of personnel management (including training).

ACUS should also have the responsibility to issue guidelines for the laws of general application which comprise the framework of federal administrative, open government and access to information laws. These laws have common goals and objectives—fairness in administrative practice and insuring open government and availability of government information. They also impact on management of agency procedures and on reducing paperwork. Interpretations and definitions under one law often affect other laws in this group and coordination among them is necessary. For these reasons, we recommend that ACUS be given the responsibility for all federal, executive and regulatory agencies and programs. The authority of ACUS should be limited to making recommendations and issuing guidelines, while leaving the agencies themselves responsibility for deciding what action to take. These changes will require amendment of some of the laws which currently give OMB authority to issue such guidelines.

This is not meant necessarily to reflect on the manner in which OMB has carried out its responsibilities under these laws. Nevertheless, it must be said that OMB has not exhibited keen interest or enthusiasm in having to accept responsibility for laws such as the Privacy Act of 1974 and other procedural and information laws. Moreover, OMB has other important functions to perform with a relatively small staff and budget. It should not be given responsibility for oversight of laws for which there does not seem to be a more appropriate repository. An agency having to accept responsibilities it is not eager to have will find ways to allocate its resources to reflect this situation. ACUS will not suffer from the same problem. It will be the logical and appropriate repository for oversight of the procedural and information laws. We discuss each of the laws under discussion here separately below.

ACUS should significantly expand the services presently provided to Congress. The Administrative Conference has regularly responded to Congressional committees' requests for comments on pending bills. It has also, upon specific direction, as in the case of the RRRR Act and Magnuson-Moss, engaged in particular studies and reviews of particular procedural programs. We are of the view, however, that any agency such as ACUS can and should do more to aid Congress in its legislative and oversight responsibilities for regulatory agencies. ACUS should assist the Committees of Congress in reviewing organizational and program recommendations, to provide analysis of the probable beneficial and adverse impacts of major regulatory action and to develop specific recommendations to improve the effectiveness and efficiency of regulatory agency activity.

ACUS should provide an overall capability to enable the Congress to determine the extent to which all federal regulatory agencies, independent or not, are carrying out the policies and objectives established by law. In doing so, ACUS should work with agencies, at the direction of the appropriate Congressional committees, to develop a comprehensive plan for carrying out the agency's mission. Such plans

should set forth and discuss the fundamental economic assumptions underlying agency actions and the role that economic, social, consumer, environmental and other considerations play in the development of agency policy. The plan should be combined with the agency's proposals for reducing paperwork, decreasing delay and eliminating unnecessary regulation of small business. These plans should be submitted to the appropriate Congressional committees on a fixed schedule. ACUS should also respond to requests of Congressional committees for reviews and analysis of particular regulatory programs.

The Administrative Conference has traditionally dealt with regulatory and administrative issues from the perspective of procedure and management. We believe this approach remains appropriate. We do not wish to interfere with traditional independent regulatory agency control over substantive policy. However, we believe it has been demonstrated that some form of central guidance is necessary with respect to agency procedures and management functions.

The present statutory structure of the Conference can form the basis of the revitalized agency. The Administrative Conference Act gives the Conference extensive authority to:

> (1) study the efficiency, adequacy, and fairness of the administrative procedure used by administrative agencies in carrying out administrative programs, and make recommendations to administrative agencies, collectively or individually, and to the President, Congress, or the Judicial Conference of the United States, in connection therewith, as it considers appropriate,
>
> (2) arrange for interchange among administrative agencies of information potentially useful in improving administrative procedure; and
>
> (3) collect information and statistics from administrative agencies and publish such reports as it considers useful for evaluating and improving administrative procedure.

Moreover, "administrative procedure," "administrative agencies" and "administrative programs" are defined sufficiently broadly to permit ACUS to make recommendations with respect to both independent and executive branch regulatory agencies and programs. It is also our view that the present statute gives the Administrative Conference the power to issue recommendations or advisory guidelines on broad issues of agency practice and management unrelated to particular statutes such as the Administrative Procedure Act. We also believe that the Administrative Conference has the power to make the issuance of such guidelines subject to agency and public comment in much the same manner as in the case of notice and comment rulemaking. We would expect that before issuing guidelines, ACUS would consult widely with appropriate public and private entities to the maximum extent possible. At the discretion of ACUS, representatives of the agencies effected by the guidelines should be allowed to present their views orally in public hearings. However, we emphasize that ACUS should not be required to adhere to the requirements of section 553 of the Administrative Procedure Act in issuing such guidelines.

The following functions are the principal ones that we believe should be performed by a central agency charged with responsibility for reform of regulatory and related processes.

1. Providing guidance for laws of general applicability

We recommend that ACUS have responsibility for issuing guidelines on and monitoring, on a regular and consistent basis, agency compliance with statutory and executive order requirements of general applicability dealing with procedure and management. This includes the President's Executive Order 12044 "Improving Government Regulation," and any similar requirements subsequently enacted in statutory form. It also includes the Administrative Procedure Act, the Federal Advisory Committee Act, the Federal Register Act, the Freedom of Information Act, the Privacy Act of 1974, and the Government in the Sunshine Act. Responsibility for issuing guidelines for compliance in these various areas is now scattered among several different agencies, as indicated below in greater detail.

It is our view that agency implementation and periodical interpretation of the procedural requirements of the laws of general applicability should be monitored and assessed systematically and continuously instead of merely when a problem is apparent. Such sustained attention to the need for refinement, adjustment, elaboration or modification of the procedures generally prescribed by these acts fits precisely with the research, audit, advisory and consultative functions of the Administrative Conference contemplated here.

We do not believe, however, that it is possible or desirable to provide for rulemaking with sanctions and enforcement powers, or to give ACUS power to affect substantive matters. We recommend that any guidelines issued by ACUS be solely advisory, and not have the effect of regulations.

(*a*) *Executive Order 12044*

The President's Executive Order 12044, "Improving Government Regulation" is concerned primarily with the review of existing regulations and the development of new regulations. It seeks to regularize and strengthen the development process, and in so doing to make regulations more effective, reasonable and understandable. The Order attempts to achieve the goal of improving existing and future regulation by developing regulations through a process which ensures that:

> (a) the need for and purposes of the regulation are clearly established;
>
> (b) heads of agencies and policy officials exercise effective oversight;
>
> (c) opportunity exists for early participation and comment by other Federal agencies, State and local governments, businesses, organizations and individual members of the public;
>
> (d) meaningful alternatives are considered and analyzed before the regulation is issued; and
>
> (e) compliance costs, paperwork and other burdens on the public are minimized.

The Executive Order gives the Office of Management and Budget authority to "assure the effective implementation" of the order and charges OMB with reporting to the President "on the effectiveness of the Order and agency compliance with its provisions". But "independent regulatory agencies" are specifically excluded from coverage

of the Order because the President wished to preserve their independent status. He has, however, requested the chairman of 18 specifically listed agencies to voluntarily apply the policies and procedures of the Order. But no unit is designated to oversee the implementation of these policies and procedures by these independent agencies adopting them. It would be inappropriate for OMB to exercise such authority over the independent regulatory agencies for the same reasons the President felt it necessary to exclude them from the coverage of the Executive Order.

A letter to President Carter dated Dec. 16, 1977 sent by 13 Senate Chairmen and ranking minority Members of Committees concerned with regulation, indicated general agreement "with the basic objectives" of the Executive Order. In that letter, however, the Senators urged the President to take the action he did in excepting the independent regulatory agencies from coverage of the Executive Order. We believe that the regulatory agencies should voluntarily adopt the procedures set forth in the Executive Order. Many of these procedures have been recommended in previous volumes of this Committee's Study on Federal Regulation.

In chapter four of this volume, we recommend that Congress adopt legislation establishing a regulatory impact analysis requirement for all Federal agencies. Our recommendations in that regard are not dissimilar from the substance of President Carter's Executive Order. Congress should assume responsibility for actively overseeing agency compliance with this statute. However, a selected number of economic impact statements should be subject to periodic review outside the agencies proposing regulations. In addition, a revitalized Administrative Conference should provide guidance and monitor agency compliance with this statute.

(*b*) *Government in the Sunshine Act*

As indicated, the Administrative Conference presently has a statutory concern with the implementation of the Government in the Sunshine Act. It has, pursuant to this consultative role, held meetings and consultations with agency personnel on adherence to the requirements of the law. It has also published an "Interpretive Guide to the Government in the Sunshine Act". This guide stemmed from the Office of the Chairman's statutorily mandated responsibility of consulting with the 47 affected agencies in development of their implementing regulations. This effort is the kind of guidance we recommend that ACUS continue for this law and for the others under discussion here.

The major issues in administering the Sunshine law deal with the exemptions to the general rule of open meetings and the definitions of terms such as "agency," "meeting," and "agency business." We suggest that guidance for interpretation of these matters should be assigned to ACUS, which would engage in monitoring agency adherence to the law, would suggest interpretation of the law, would offer advice on particular situations and would be in a position to report to Congress on the need, if any, for statutory adjustment or Congressional intervention.

(c) *Federal Advisory Committee Act (Public Law 92–463)*

This law provides, among other things, that advisory committee meetings shall be open to the public and that written materials of advisory committees shall be made publicly available, subject to the Freedom of Information Act exemptions. The Advisory Committee Act also required the President and the Office of Management and Budget to establish procedures and guidelines to improve advisory committee management and to foster public accountability of existing committees. Pursuant to this authority, from 1974 to 1976, OMB issued various circulars providing guidance for implementation of the Act and conducted annual comprehensive reviews of advisory committees.

As part of President Carter's Reorganization Plan No. 1 of 1977, however, the Committee Management Secretariat consisting of three people was transferred from OMB to the General Services Administration. This was done apparently to reduce the size of OMB by removing a function not considered central to OMB's primary mission. OMB retained certain responsibilities which are set forth in OMB Director McIntyre's statement to this Committee as follows:

> The specific responsibilities assigned to OMB by the Federal Advisory Committee Act were transferred to the General Services Administration by Reorganization Plan No. 1 of 1977 and Executive Order No. 12024. However, as you know, Director Lance indicated last fall that OMB would continue to play the following role in advisory committee management.
>
> Monitor GSA's actions as part of its general management oversight responsibilities;
>
> Make sure that GSA's revision of Circular No. A–63 incorporates all appropriate changes;
>
> Backstop and support GSA whenever called upon to do so;
>
> Be a court of last resort in disputes over the continuation, expiration, or creation of advisory committees; and
>
> Review the annual report of Federal Advisory Committees.
>
> I assure you that OMB will carry out this commitment and, in fact, we have continued to work closely with GSA since the transfer last November.

It is our view that because of the close relationship of the Advisory Committee Act to the other openness in government laws, and because of the importance of imposing proper management procedures on advisory committees, oversight for the Act should be assigned to a single agency interested in these issues. We recommend that the Federal Advisory Committee Act should be amended to give ACUS responsibility for suggesting procedures and guidelines to improve advisory committee management and to foster public accountability of existing committees. Such legislation should also reassign to ACUS the functions transferred to GSA under Reorganization Plan No. 1 of 1977.

The purposes of the Sunshine and Advisory Committee laws are identical in one respect—they both seek to insure as much public business as possible is carried on in public view. The same issue—

basically, under what circumstances should meetings be allowed to be closed—is involved in both acts. A single agency should provide guidance for both of these laws. Moreover, because the exemptions in these two laws are closely related to the Freedom of Information and Privacy Act exemptions, the identical agency should also provide guidance for these laws.

(*d*) *Privacy Act of 1974*

During the Congress' consideration of the bills which resulted in the Privacy Act of 1974, the Senate passed a bill which would have established an independent Privacy Protection Commission with advisory and monitoring functions. However, the House version creating only a temporary Privacy Protection Study Commission prevailed in the final version of the law. The Act as passed provides that the Office of Management and Budget shall "develop guidelines and regulations for the use of agencies in implementing the provisions" of the Privacy Act and shall "provide continuing assistance to and oversight of the implementation of the provisions" of the law by agencies.

Pursuant to this direction, OMB, with the aid of the Department of Justice's Office of Legal Counsel, issued a set of guidelines when the law became effective in September, 1975. These guidelines deal with agency compliance and with the interpretation of the exemptions of the Act. In practice, OMB has provided little day-to-day guidance to agencies in the sometimes complicated issues arising under the Privacy Act. For example, in a recent effort, dubbed Project Match, to obtain information on welfare fraud and individuals in default on student loans, the Department of Health, Education, and Welfare requested a computer tape on all civilian employees of the U.S. Government from the Civil Service Commission. It also asked the Defense Department for similar information on military employees. Each agency interpreted the dictates of the Privacy Act differently. In the end, HEW obtained the information from both CSC and DOD, but under different interpretation of the law and with OMB playing a rather late, passive and minor role. Without an agency with commitment to the purpose of the law and with an interest in consistent interpretations of the law, confusion will prevail.

The Act also requires that reports on new or materially altered record systems be sent to OMB and to Congress. When the Act became effective in September, 1975, OMB was required to review the adequacy of notices of systems of records by the agencies. Again, there was an insufficient allocation of resources to make such oversight meaningful. For example, the Federal Bureau of Investigation filed notice of a single system, maintaining that all subsidiary systems were reachable through a central index. Although this view was later disputed by Congressional committees and by GAO, OMB did not insist that the FBI separately list their various systems. Since the initial filings, OMB has done somewhat better in evaluating new systems, but there remains a large number of systems that have never been adequately evaluated. Thus, one of the purposes of the Act—the reduction in the amount of information on individuals maintained by the federal government—remains unfulfilled. OMB has also assigned responsibility

to other agencies such as the Civil Service Commission for training government personnel in how to handle implementation of the Act. Finally, OMB has discussed rewriting the Privacy Act guidelines for the past two years, but this has never moved beyond the draft stage.

After completing an extensive study of the privacy issues, the Privacy Protection Study Commission recommended that the President and Congress "establish an independent entity within the Federal government charged with," among other things, responsibility "to issue interpretative rules that must be followed by Federal agencies in implementing the Privacy Act of 1974 or revisions of this Act as suggested by the Commission".

This function should be performed by the same agency responsible for the other open government, information, and paperwork reduction laws. We recommend these responsibilities be assigned to ACUS.

(*e*) *Freedom of Information Act*

This landmark law gives an individual a right to obtain information from government under certain circumstances. The Department of Justice has historically assumed the role of providing guidance to agencies on how to respond to requests and has issued a series of Attorney General's memoranda on the law's application and interpretation. The specific statutory basis for the Department's role is the provision that the Attorney General shall submit an annual report to Congress on the nature and amount of FOIA litigation and "shall also include a description of the efforts undertaken by the Department of Justice to encourage agency compliance." The Department also handles most FOIA appeals for other government agencies. It has also established a Freedom of Information Committee in its Office of Legal Counsel to provide advice to agencies on handling freedom of information requests.

It is our view that the advice and guidance functions for FOIA should be transferred to the new agency. The purpose of the Freedom of Information Act is to make as much information available to the public as possible, yet the Department of Justice, whose primary function is law enforcement, traditionally adopts a defense attorney posture resulting in narrow legislative interpretations of the law.

During the Nixon administration, the Department of Justice took an extremely narrow and restrictive view of the Freedom of Information Act and this view pervaded the guideline given to other agencies as well as the Department's litigating posture. In contrast, one of Attorney General Bell's first acts was to inform the agencies and departments that they were not to seek out exemptions but were to make as much information available as possible.

The laws dealing with information disclosure should be interpreted by a single, impartial unit not part of the Executive branch. Since these laws are potentially adversarial to the government in that they provide rights to individuals to obtain information from government, the same agency which is the executive's lawyer should not provide guidance on how agencies react to public demands for information. In short, there should be a measure of independence and impartiality in the interpretation of the open government laws, and the only logical place to provide these characteristics is the central administrative law and management agency under consideration here.

A cursory review of the very delicate and complicated issues of interpretation surrounding the FOIA indicates how much impartial and informed judgment is needed. First, law enforcement and intelligence agencies such as the FBI and CIA view the law's requirement that they make certain information publicly available as impediments to their primary roles. There is undoubtedly a tug between the dictates of the freedom of information laws and the needs of law enforcement. A delicate balance must be struck, preferably by an agency whose sole function is fair and impartial analysis of the meaning and intent of the law. Second, two of the more important exemptions to the FOIA deal with confidential trade secrets and personal information "the disclosure of which would constitute a clearly unwarranted invasion of personal privacy." Thus, in the interpretation of the FOIA, considerations of privacy and the confidentiality of financial and commercial information are of great concern, yet the same agency does not have oversight for privacy matters and for FOIA. There is no focal point in the Executive Branch for detached and impartial consideration of the relationship between these concepts. It is our view that this should be remedied by assigning the advice and guidance functions under the FOIA to ACUS. ACUS should be assigned the responsibility for submitting an annual report to Congress on agency compliance. ACUS should also be given specific authority to issue guidelines for agency compliance with the FOIA.

2. Statistical functions

We believe that ACUS should continue collecting, analyzing and disseminating statistics from administrative agencies in order to aid in identifying delays and other problems in the administrative process. However, as previously indicated, the utility of much of the data gathered by agencies is minimized by the difficulty in making useful comparisons between various kinds of agency proceedings. Each agency gathers its own statistics and some contend that there is no dearth of data in absolute terms, but often the data is not useful or the lessons to be learned are not clear. There is surely need for obtaining more refined and more useful statistical information. These are functions which should be performed by ACUS, with sufficient powers to obtain specific data and the resources to analyze and use such date to make meaningful comparisons. ACUS should be directed to collect data in such a fashion to make possible comparisons among similar functions at different agencies.

S. 2490, the Regulatory Procedures Reform Act, which resulted from Volume 4 "Delay in the Regulatory Process" of this Committee's study, would require each agency to compile statistical information about agency proceedings. It also gives the Administrative Conference responsibilities for oversight and review of the statistical reports and requires the Conference to submit an analysis of such reports. In 1969, the Administrative Conference recommended that each agency compile statistics on their current caseload and the length of time proceedings take to complete. Yet in 1974 the Conference concluded that only five agencies were collecting such statistics on a regular basis. S. 2490 will assure that in the future each agency collects and reports the necessary data. This will allow Congress to exercise its oversight responsibilities in the area. It will also provide addi-

tional assurance that each agency has management procedures which adequately track, on a regular basis, the progress of proceedings under consideration in the agency. S. 2490 would also authorize the Administrative Conference to gain access to such records, information, and analysis that the Conference requires to carry out its functions under the Act. Currently, the Administrative Conference does not possess such specific statutory authority.

In addition to requiring compilation of statistical data, S. 2490 would require the Administrative Conference to monitor the efforts of the agencies to comply with the general provisions of the bill in expediting their regulatory procedures. The bill provides that each year the Administrative Conference will review the reports submitted by the agencies pursuant to section 103 and by June 1 of each year provide Congress with an analysis of such reports. In its annual report, the Administrative Conference will provide any recommendation it determines appropriate for additional legislation, for changes in agency practices and procedures that may be implemented without legislation, or any other steps it thinks Congress or the agencies should take to carry out the purposes of this bill.

3. Procedural-management audits

One of ACUS's principal functions should be to conduct audits of agency procedures and management methods for conducting their proceedings. In addition to auditing agency management of their caseloads, this function would include providing aid to agencies in establishing and meeting deadlines and in instituting other management tools to expedite and make procedures more effective.

The procedural-management audit function could be carried further, to examine an agency's mechanisms for reevaluating its own management and administrative procedures on an ongoing basis. Such audits would be concerned not only with caseload management but with general agency adherence to good practice, as represented by the Administrative Procedure Act and other procedural statutes, directives of the Executive Office of the President, and recommendations of the Administrative Conference.

On an even broader plane, ACUS could examine the whole range of the procedures of the given agency, or some substantial part of them, to develop recommendations for making the specific procedures more effective, fairer and less burdensome. Such procedural audits would have to be conducted in an empirical and practical way, examining the day-to-day workings of the agency as well as the broad structure of its procedures. A study along these lines of income tax procedures of the Internal Revenue Service was made by the Administrative Conference in 1974–1975, resulting in 72 separate recommendations which catalyzed many significant improvements.

This recommendation envisages a limited management and procedural audit which would not be concerned with substantive policies. It could examine the effectiveness of a broad range of possible management strategies and should note the relationship between procedural modifications and the outcome of cases, so that procedural reform will not inadvertently change agency policy.

ACUS must also have a strong capability to furnish advice and assistance to the agencies on matters of administrative procedure. For

example, ACUS should offer comment and assistance to agencies with respect to proposed changes in their procedures, especially in the implementation of the administrative aspects of newly enacted legislation. Detailed analyses of the procedural features of legislation—and, when appropriate, prescriptions for compliance with the applicable statutory requirements—should be made available to the agencies. The agencies should be provided with evaluations of their implementing procedures and, when appropriate, offered proposals for modifications. ACUS should also be prepared to participate at the staff level in interagency and OMB task forces and study groups working on organization and procedural initiatives. It should have specialists who can provide assistance to agencies on immediate administrative problems. In rendering assistance of this sort, the staff persons involved should utilize the reservoir of Administrative Conference recommendations for improvement of procedures that has been developed. Indeed, the advisory function, among other things, should serve as a vehicle for implementation of such recommendations.

4. Paperwork

Paperwork reduction and responsibilities now shared by OMB and GAO under the Federal Reports Act of 1942 should comprise part of the management audit. Paperwork is a prime concern of many who find government regulation so burdensome. The Commission on Federal Paperwork expended about $9 million in conducting an exhaustive study of federal paperwork, but if this study is not to meet the fate of countless government studies which seem to be used primarily to adorn footnotes of subsequent studies, Congress must take the next step and assign the task of implementing the recommendations to a unit in government with a clear mandate and sufficient resources to do the job. Public Law 93–556 creating the Paperwork Commission, at section 3(d), provides as follows:

> (d) Upon submission of the Commission's final report, the Office of Management and Budget, in coordination with the executive agencies, shall taken action (1) formulate the views of the executive agencies on the recommendations of the Commission; (2) to the extent practicable within the limits of their authority and resources, carry out recommendations of the Commission in which they concur; and (3) propose legislation needed to carry out or to provide authority to carry out other recommendations of the Commission in which they concur. At least once every six months, the Office of Management and Budget shall report to the Congress and the President on the status of action taken or to be taken as provided herein. A final report shall be submitted within two years.

According to OMB's budget submission for fiscal year 1979, the Regulatory Policy and Reports Management Division with a total of 21 positions, for both fiscal year 1978 and 1979, is reponsible for implementation of the Executive Order on Improving Government Regulation. It also provides policy coordination and advice on regulatory matters within OMB, participates in legislative clearance and budgetary decisions, is responsible for managing the reports clearance process and is responsible for coordinating implementations on the

Paperwork Commission's recommendations. It is obvious that a unit with 21 positions, cannot, even by using detailees from other agencies, do a thorough job on the large number of tasks described above.

The Paperwork Commission recommended creation of a Department of Administration to consolidate the central administrative functions of government, thereby promoting more efficient, effective and responsive administration and reducing excessive and unnecessary paperwork. Commissioner Elmer Staats, Comptroller General of the United States, did not support this proposal. He recommended "establishment of a strong, adequately-staffed unit in the Office of Management and Budget with coordinating and policy responsibilities for all aspects of statistical collection, analysis, dissemination, and paperwork management; alternatively, if this is not acceptable, he would recommend placement of these responsibilities in an independent Federal Statistical Commission." [11] The Paperwork Commission also suggested other possible organizational arrangements including placing policy and coordinating functions in OMB "along with additional resources" or "in an independent commission." [12]

It is our view that paperwork reduction is closely related to other management questions under review here. It is difficult to reduce paperwork without an understanding of the way in which an agency operates and its real needs for requiring information requested from industries. We recommend that responsibility for recommending ways to reduce paperwork and to implement the recommendations of the Commission on Federal Paperwork be assigned to the ACUS. OMB clearly does not have the resources to do the job, nor is it likely that OMB's size will be expanded.

The Paperwork Commission made over 800 specific recommendations aimed at executive and regulatory agency management practices. In connection with its work in improving agency management and in lessening the delays of regulations, ACUS might contribute significantly to the reduction of the paperwork burden by attempting to consolidate forms, improve procedures and eliminate duplication. If ACUS is not assigned this task, we are of the view that it will not be done since OMB is not likely to consider it of significantly high priority to give it the attention it deserves.

5. Commenting on legislation

Many procedural problems can be avoided by early detection in the course of the legislative process. This Committee has recommended that Congress should draft its regulatory statutes as narrowly as possible, giving regulators more precise and specific delegations of authority. It is, after all, difficult to hold administrators to standards if only vague and general standards exist. Similar reasoning requires that delegations of procedural responsibility be as clear and precise as possible in order to avoid unnecessary litigation and consequent delay over the meaning of new statutory provisions. We believe it imperative that proposed procedural legislation and the procedural features of other proposed legislation be systematically monitored so that, when warranted, input in the form of written comments, consultation, testi-

[11] Commission on Federal Paperwork, Final Summary Report, Oct. 3, 1977, p. 19.
[12] Ibid., p. 21.

mony and the like can be made on a timely basis. Activities of this type should not be confined to those occasions when views are solicited. Rather, ALMA should have the capability to identify on its own, and at an early stage, those legislative proposals that have significant procedural features, and to comment upon them.

6. Performing clearinghouse and educational services

The Administrative Conference is currently empowered, among other things, to "arrange for the interchange among administrative agencies of information potentially useful in improving administrative procedures" (5 USC 574(2)). This function is an important one. There should be a continuing program to compile systematically, and in appropriate format, the pertinent experiences of particular agencies with respect to procedural issues of common interest, so that the cumulative experience of all agencies can be shared. Practical and authoriative manuals for dealing with common problems of administrative procedure should be formulated and published.

Such an activity would be especially useful where the common problems arise from statutes of general applicability, such as the Administrative Procedure Act, the Federal Advisory Committee Act, the Federal Register Act, the Freedom of Information Act, and the Privacy Act. A guide of this sort concerning the Government in the Sunshine Act has been published by the Administrative Conference.

ACUS should also have a capability to conduct and participate in seminars and other training programs for agency personnel, both on an inter-agency and single agency basis. The programs would potentially concern the whole range of procedural and management issues confronting administrative agencies. At present, the Federal Register and the Civil Service Commission conduct training programs, such as, for example, how to write simple regulations and how to deal with Privacy Act or Freedom of Information Act requests. Some of these functions, especially if they coincide with the new agency's preparation of guidelines and manuals for particular statutes, might be assigned to the new agency.

7. Monitoring and participating in court proceedings

Court cases that raise important procedural issues should also be monitored. At a minimum, such monitoring should take place so that the attention of agencies can be called to procedural developments that may bear upon the manner in which they conduct their business. Beyond this, however, it may also serve to provide the basis for selective involvement by the organization in court cases involving significant procedural and management issues, by working with the Department of Justice and other agencies in developing views to be submitted to the courts. Also, since pertinent judicial developments sometimes occur outside the case context and in the deliberations of the Judicial Conference, regular liaison should be maintained with that organization.

C. Summary

The Administrative Conference of the United States has made useful contributions, given the limitations of its structure and re-

sources, over the past decade toward improving administrative practice and procedure. However, the Administrative Conference has contributed relatively little to solving the persistent regulatory management questions primarily because its history and its structure militate in favor of legalistic studies. The legislative structure of the Conference has proven to be cumbersome and unwieldly.

We recommend that the Administrative Conference be restructured and that it be charged with actively monitoring the way agencies plan and manage their regulatory responsibilities. We recommend that the Administrative Conference itself should be reduced in size and reconstituted as an advisory committee to the ACUS Administrator. We recommend that ACUS be headed by a single administrator, nominated by the President and confirmed by the Senate, to serve a four year term coincidental with that of the President.

This restructured and expanded agency should provide the present research, advisory, statistical, educational and coordinative responsibilities of the Administrative Conference. ACUS should also have the authority to issue guidelines for all Federal agencies, concerning certain laws of general application. These laws include Executive Order 12044 (or any statute with similar purpose), the Administrative Procedure Act, the Federal Advisory Committee Act, the Freedom of Information Act, the Privacy Act of 1974 and the Government in the Sunshine Act.

In addition, it should actively engage in oversight of planning, management and other agency activities designed to bring about greater efficiency and effectiveness of operations. This includes the reduction of paperwork, conducting procedural-management audits and implementation of procedures established to improve government regulations. It also includes the range of advisory and educational activities in which the Administrative Conference has been engaged.

Chapter Eight

CONCLUSIONS AND RECOMMENDATIONS: A FRAMEWORK FOR FEDERAL REGULATION

Our discussion of regulatory framework began by noting that both criticism of, and perceived needs for, regulation are stronger now than ever before. We reviewed the various stated rationales for regulation; discussed the ways in which changing circumstances have vitiated some of these objectives; considered the substantial and frequently hidden costs; and noted the array of possible alternatives to, and improvements in, regulation. Finally, we addressed the problems of transition which might accompany a change in regulatory approach, and the contribution that could be made by a centralized Administrative Conference. This chapter addresses the questions: What is the vitality of the numerous rationales for federal regulation? What alternatives appear most promising? How should the Congress evaluate proposals for regulatory change or for the extension of regulation to new areas? This review defines a substantive framework for federal regulation—in other words, states those conditions which may merit government intervention, and the types of intervention most appropriate to each.

A. The Inadequacies of Basic Regulatory Decision-Making

Regulatory decisions, particularly on the implementation of new schemes and the continuation of existing schemes, all too often are based on insufficient analysis and consideration of alternatives. The clearest indication of the truth of this assertion is the fact that even the approximate total costs of Federal regulatory programs are not known, and as such are not subject to regular, periodic review and appraisal. The same is true of the benefits of regulatory activities.

In some cases alternatives to present regulation may be preferable. In part because costs are neither known nor required to be collected, alternatives often go unconsidered. There does appear to be resistance to considering alternatives, even when they might allow better achievement of regulatory goals at lower cost to society. Some regulatory objectives may be inappropriate, and the vitality of other goals may have been adversely affected by changing circumstances. Appraising the actual effects of regulation on various goals can only be achieved by making costs, benefits and other effects visible, and by experimenting with alternatives. This does not argue simply for benefit-cost analysis, but rather for broadly based impact evaluation performed on a regular basis.

In addition, regulation has in some instances failed to adapt to changing circumstances and thus has become inappropriate. For example, on most routes railroads are no longer natural monopolies, and

the same is true of some business uses of telephone long lines. Increased scale economies (and natural monopoly) in the transmission of electricity means that transmission lines might now be regulated as common carriers and that in some areas competition in electricity generation could be introduced. Yet, regulation in these areas has remained basically unchanged at least until recently with passage of the National Energy Act. Motor carrier regulation, the justification for which was dubious from the very start, was seen as a method of preventing excessive competition and protecting the railroads. Destructive competition is most unlikely in an unregulated trucking industry, and attempts to protect the railroads have failed. Yet regulation persists.

The persistent nature of regulation is due in large part to interests vested against change. After all, regulation has had its beneficiaries. Trucking firms have made large investments in operating rights. Workers may have gained from controls, and firms are familiar with a regulated business environment. These groups will have clear interests in opposing changes in regulation. The costs of regulation may be diffused and not visible to the public, and, because of inadequate impact evaluation, obscure even to policy makers. So, too, the benefits from regulatory change may also be highly diffused, so change will attract little public support. Periodic appraisal of regulatory effectiveness and appropriateness could generate some movement.

B. Reasons for Federal Regulation: Which Ones Have Continuing Validity?

In Chapter 2, we reviewed potential various reasons for regulation. These rationales could justify continuation of regulation much as it is at present; or, they could continue to justify some type of federal intervention but not present regulation. Alternatively, the rationale itself may have been made obsolete by changing circumstances. Finally the rationale may have been without merit from the outset.

In general, we find that most of the proferred rationales have either at least some degree of continuing validity or provide potential justification for federal intervention. However, as justifications for present long-term regulation, a number are seriously flawed. In all cases alternatives are available which might promote better achievement of goals with lower costs or fewer adverse side effects.

Simply because a problem exists and, in theory, is remediable does not mean that regulation or other intervention is desirable, even on economic grounds. The potentially widespread indirect costs and consequences of regulation, subsidy, and other interventions are clear, and even direct costs are significant. In light of that burden, intervention should only be undertaken where there is a clearly identified problem, and where the potential achievements of Government action are substantial. The relevant benefits and consequences include effects on economic efficiency and the distribution of income as well as on such values as equal opportunity and equal protection.

The discussion below emphasizes economic effects. The general finding is that natural monopoly, external costs, imperfect information, and natural resources problems justify intervention in a number of areas. However, even in these areas, in certain situations alternatives would be preferable.

Other proferred justifications for present long-term regulation are much weaker. Either they inherently lack strong bases or alternatives appear preferable to present arrangements. These rationales include prevention of destructive competition, regulation of competing industries, promotion of key industries, cross subsidy in general and to small communities in particular, and preserving "property rights" in regulation. Present regulation has been somewhat effective in protecting consumers from oil and gas price increases by appropriating economic rents, but doing so by price controls without suitable taxation has distorted both consumption and production decisions. Some of these rationales may justify short-time regulation or some other form of government intervention but not long-term regulation.

1. Natural monopoly conditions as a justification

The existence of natural monopoly has been and continues to be a major justification for regulatory intervention. That is so because of the potentially damaging effects of output restrictions, monopoly profits and discrimination in price or quality. Monopoly power can cause social losses because of restricted output and elevated prices. Also monopoly profits can result, enriching producers at the expense of consumers. Finally, discrimination may be used to increase profits or deter competition.

Natural monopoly is only "natural" in a given technological or economic environment and, with market growth or technical advance, competition may automatically develop. That has happened in a number of areas. For example, the growth of efficient long distance trucking and the decline of railroads, in part because of regulation, has eroded most of the original rail monopoly power. So, too, increased telephonic communication, the development of microwave technology, and relatively permissive FCC rulings have made competition feasible for some business communications. Long distance individual message service probably remains a natural monopoly. Pipelines and electrical transmission are natural monopolies or tight oligopolies on many routes, and regulatory controls may be appropriate to prevent monopoly pricing.

The technical changes which have allowed transmission of ultra-high voltage electricity have both enhanced potential transmission line monopoly power, by increasing scale economies, and increased economical transmission distances. This means that while the need for social control of transmission lines may have increased, some competition may be feasible in electricity generation. Increased natural monopoly in one area may in this way decrease monopoly in other areas. In the electricity case it may be appropriate to treat some transmission lines as common carriers, and require relatively open access.

However, some actually or potentially competitive industries have been regulated as natural monopolies with control of prices, entry and exit. These include airlines and trucking, neither of which appear ever to have enjoyed substantial enduring monopoly power.

Part of the problem, at least—particularly in trucking and, until recently, in airlines—has been the failure to recognize the constraining effects of easy entry and mobility of capital. Regulation has fostered excess capacity, excessive nonprice competition, and inefficient investments in private trucking fleets by business firms. A similar situation

has in the past marked the airline industry. Such "problems" could in principle be "solved" by further extending the scope of present regulation, but the result would probably be even greater inefficiency and rigidity. All of which results from regulation of inherently competitive industries as if they were monopolies, with control of pricing, entry and to some extent, exit. Thus this justification is not appropriate as a basis for continued regulation of rates and entry in trucking or air transportation.

Competition should be allowed where feasible, and in many cases the regulated "monopolist" should be permitted, if not required, to respond by reducing prices but certainly no lower than to an incremental cost level. This would assure that regulated prices were not sustained at excessively high levels. As previously mentioned, the FCC has allowed such partial competition for leased microwave and long lines service. The ICC has not followed a similar course, much to the detriment of rail service.

Entry restrictions may be justified in a natural monopoly setting because the cost of duplicate facilities is, by its nature, excessive. If competition did exist it would tend to be short-lived. But attempts to enter may be indications that rates are excessively above cost or that the sector is not in fact a natural monopoly.

The possibility of monopoly output restrictions and excess profits does not mean that traditional rate of return regulation will yield net benefits. Rate proceedings will be costly to firms, and regulatory delay and uncertainty can increase risks and raise capital costs. Also, shielded from competition, regulated monopolies may become inefficient. Regulation which fixes the allowed rate of return above the cost of capital may induce excessive capital investment and raise costs.

This may have occurred in telecommunication, where AT&T appears to have shown a preference for relatively capital intensive alternatives, preferring to build rather than lease satellite circuits. To avoid this tendency, regulation should attempt not to reward a firm in proportion to its use of any particular input. Unfortunately, regulators have restricted the use of peak-load pricing, which could allow decreased investments capacity, and lowered rates, and inhibited the introduction of new technologies.

Indeed there is no definitive evidence that regulation has in fact constrained monopoly pricing. Moreover, the possible side effects of regulation indicate that alternatives may be desirable. Nationalization is one possibility, and in foreign countries has been applied to power generation, and transmission, transport, communications, and other sectors. In this country it could be an alternative to federal regulation of monopoly in oil and gas pipelines, some electricity transmission, and long-lines telecommunications. Yet the potential benefits from this are unclear. The efficiency record of public firms is uneven. The TVA can be cited in that regard as a success but many municipally owned electrical utilities appear to price relatively inefficiently by not recognizing cost differences in rates. Public ownership may also decrease output and raise prices to typical users. On the other hand the national British and French electric power systems appear to have been relatively efficient and innovative in peak-load and marginal cost pricing. Foreign nationalized railroads, still enjoying some degree of monopoly power,

have generally sustained losses perhaps in part due to excessive innovation resulting from easy access to capital at low cost. Nationalized firms may be subject to the imposition of special burdens, such as the requirement to purchase inefficient domestically made equipment imposed on the French telephone system. Lacking financial incentives to lower costs and increase output nationalized firms may be very inefficient.

Even though the private and public airlines in Australia are constrained to be virtually identical in all visible ways, including equipment and scheduling, the privately run line has been more productive. Inefficiency may show up in *lower* costs combined with potentially lower quality output as may be the case with V.A. hospitals. Overall, it is doubtful that public enterprise would be an improvement on present monopoly regulation, and the record indicates that results could well be worse. Also to effectively control monopoly a federal chartering authority would require regulatory powers, thereby creating little real change in present conditions.

Another alternative would be to allow periodic competitive bidding for monopoly franchises, thus encouraging competition for *the right to provide service* and constraining costs and pricing discretion. If rate structures are complex or the product has many dimensions, choice of a provider may be very difficult. If capital equipment is very long lived—as in electricity distribution, franchises may necessarily be so long that incumbents will acquire insurmountable advantages over potential providers.

If contracts must recognize a wide range of economic and technical contingencies, some formal regulation will be required as well and potential providers will have incentives to attempt to gain entry by initial low-bid "bait and switch tactics". But bidding for franchises in cable TV (which is primarily regulated at the local level), combined with careful study of the bid proposals, can provide a check on cost and performance. One possibility would be to grant future licenses or certificates not in perpetuity but for a more limited period, and give government or government-selected "new" providers "buy out" rights according to pre-arranged terms. The risks of displacement might possibly raise the cost of capital, but incumbent's power could be lessened. Finally, direct subsidy could be used to induce monopolies to expand output. But that would conflict with the goal of reducing monopoly profits.

Alternatives aside, the overall extent of natural monopoly in regulated sectors is less than believed, because market growth and the appearance of substitutes have offset concentrating tendencies. Moreover, entry restriction and price regulation should not be absolute even in supposed "monopoly" sectors. Indeed, regulation should mandate increased peak load and other suitably "responsive" pricing. Some increased regulatory oversight of major capital expenditure programs could counter tendencies to undue rate-base expansion, though this should be done on a highly selective basis so as not to inhibit innovation. Franchise bidding combined with regulatory oversight of contracts should be given at least experimental trials, possibly in the field of cable television. Most importantly, potentially competive sectors such as airlines and trucking should not be regulated

as monopolies. Gradual and phased relaxation of both entry and price controls could lower costs and prices, and improve service quality with little risk of either monopoly excess or destructive competition. While natural monopoly can justify some form of public control, today's apparent monopoly can become tomorrow's workably competitive sector. And the opposite could also occur. This only lends strength to our general recommendation for thorough periodic review of regulatory performance and appropriateness.

2. Controls on price discrimination

Much Federal and state regulation generally has as a stated purpose the prevention of undue discrimination, in the sense of prohibiting different prices for similar services. For example, price discrimination between long and short hauls and in favor of large shippers were among the complaints leading to railroad regulation and establishment of the ICC. To be sure, price discrimination can unduly increase producer profits, at the expense of disfavored groups, and impede competition. However, perversely, regulation sometimes actually imposes or fosters discriminatory practices by regulated firms. For example, first class postal rates, although uniform, do not reflect location and distance, and thereby may discriminate against users on high density routes or those sending letters short distances. Generally any regulatory approach which prevents relative costs and scarcity values from being reflected in rates or prices may be discriminatory.

In both the short and long run, cost-based price differences are necessary for efficiency. In the short run price variance may exist (as between regions) because of differential scarcity and resource immobility. Under competition these price differences will promote efficient patterns of production and consumption. Economic price discrimination—which charges different price-cost margins to various users as an exercise of monopoly power—can have good and bad effects. Monopoly profits will increase but the firm may expand output, thus reducing restrictions in that regard. This can lead to threatened entry into the high rate areas and demands for protection from entry. Discrimination can also competitively disadvantage payers of high rates. Selective or predatory price cutting and discrimination can be used by monopolies to destroy competition or deter entry. It can also lead those subject to high rates to expend resources to gain access to the lower rate levels.

In many regulated sectors, it does not appear that discrimination is or could be a significant problem. For example, under present circumstances rail monopoly power is probably too slight for there to be much discrimination. So too, trucking is too flexible and atomistic for there to be substantial monopoly power and discrimination without regulation. In a less regulated airline industry monopoly power on most routes would be slight and the ability to harmfully discriminate small. This leaves pipelines, telephone long lines and electricity transmission lines, which could have enough monopoly power to make harmful discrimination a real possibility.

Preventing price differences can have negative effects, and imposing uniform prices when costs differ is itself discriminatory. Disallowing cost-justified rate differences can slow technical progress, as in the

transportation industries, where introduction of unit trains, larger hopper cars, and "piggy-back" service was slowed. To increase air carrier profits, the CAB-required discrimination in the form of enforced higher margins on long haul flights, inducing investment in the inefficient and rapidly obsolete DC–7. Had prices not been discriminatory and had fare discounts been offered on flights with stops, this wasteful investment would probably not have been made.

Prohibiting peak-load price differences (perhaps on the ground that they are viewed as discriminatory) can cause excessive investment in capacity and elevated rates. Charging uniform airport landing fees does not take account of actual costs of delay, congestion and increased risks of accident at peak hours; and may contribute to pressure for increased airport capacity, with resulting environmental impacts and greater demands for subsidy. "Nondiscrimination" in landing fees also heavily subsidizes general aviation users of busy airports, at the expense of other flyers, while yielding comparatively slight benefits to general aviation. Similar problems occur with "nondiscriminatory" highway tolls which, if constant over the day and week will not take account of the costs of congestion. In order to be efficient, rate or fee differences should take account of all the relevant cost differences whether the costs are visible or not, and not simply be based on the costs to producers of providing service. "User charges" equal to all will be discriminatory in effect if various users impose different social costs.

Imposing identical prices when costs differ may also cause deterioration in the higher cost service and may induce wasteful service competition to capture business in the high profit areas. The latter has clearly occurred in the CAB regulated airline industry though recent reform have reduced the problems.

As an alternate to regulation, public enterprise is one option for preventing undue discrimination, on the theory that government could achieve that purpose by simply setting appropriate rates. However that may not be as simple as it appears. For example, the United States Postal Service has continued heavy discrimination against first class users despite explicit legislative instructions and adverse court decisions. Moreover public enterprise may be more vulnerable than private firms to powerful pressures for special treatment. Also, if viewed as a source of revenue (as was the British Post Office) public ownership might in fact have strong tendencies to discriminiate to increase profits. Shielded from competition, they could do so even more rapaciously than private firms.

Overall, assuming the existence of a problem in need of remedy, regulation may be the best way to deal with undue discrimination. But that justification ought to be used sparingly, because whenever possible cost-justified differences should be allowed. Certainly, in competitive industries, there is little rationale for regulating price at all, much less price differences. Firms with market power in industries with entry barriers might engage in predation or anticompetitive selective price cutting, but such actions have been rare in unregulated industries.

Predatory discrimination may be more likely in regulated industries where entry is barred or limited, or where firms may have incentives to enter unprofitable markets to increase their rate bases and allowable

total profits. Telecommunications may be such an industry, but examples of predation are not apparent. Requiring that prices at least cover the direct costs of service sharply reduces the potential for predatory discrimination. Overall, then, a combination of some regulatory oversight of price structure, with elastic concepts of appropriate cost justification, appears desirable in those cases where substantial monopoly power exists. On the other hand, in competitive industries, there is no compelling reason to regulate price differences. Moreover, in such industries, price regulation is likely to be wasteful, costly and administratively burdensome.

3. Control of external effects

Compelling firms or individuals to consider the full consequences of their actions is without doubt a valid justification for some form of government intervention. As previously mentioned, the major thrust of present regulation is setting and enforcing standards, on the theory that by doing so firms and individuals as well as state and local governments will be forced to properly consider the costs of their actions and thereby control external effects. But, if standards go unenforced or sanctions are ineffective, the system will not work effectively. This may have been the case for FDA food plant inspections and OSHA safety inspections as well as some EPA programs. By their nature, standards appear to guarantee certainty of result. However, if the costs of complying are substantial in comparison to the costs of not complying, the result will be far from certain.

Regulation uses many types of standards, which fall into two major categories. "Performance standards" require certain achievements, such as particular emission levels, stopping distances, nutritional qualities, or levels of worker exposure to hazards. That type of standard allows firms and individuals to choose the least-cost method of compliance. This approach encourages flexibility and technical change, although extensive monitoring may be necessary to insure compliance. But if the standards are set without regard to compliance costs and potential consequences, undue burdens may be imposed. For example, Federal flood insurance regulations require all member communities to provide protection against the "100 year flood" however slight the potential hazard. On the other hand "specification standards" require particular means of achievement, such as specific design, equipment or techniques. Unlike performance standards, monitoring and enforcement can be less burdensome. Yet delineating specific means of achievement necessarily limits the range of technological change and may impose unnecessary costs. Flexibility is also lost, as firms and individuals are given little latitude to choose the least cost method of compliance.

Despite its drawbacks, a standards-enforcement approach, is in certain circumstances justified. Specification standards in particular and standards in general are most appropriate when the risks from "noncompliance" are great—as in the case of dangers associated with nuclear reactors—or when the consequences may be severe or irreversible, as with possible epidemic-causing diseases. Thus this approach has a certain viability.

However, unless carefully designed, standards may impose higher than necessary costs. That consequence could occur with standards

which require equal effort or abatement from all sources of externalities. For this to be justified the level of hazard caused by each source would itself have to be of critical importance, and not simply the total or average. However appropriate that may be some hazards, it is of little use for most environmental problems. Requiring "equal" abatement can impose very high cost by requiring investment by some sources even when very little benefit is produced. The result at least for some air and water pollution problems can be abatement costs double that necessary to achieve the same level of environmental quality.

Strict enforcement of standards would be important if there were clear and undisputed "thresholds," above which risk or damage increased dramatically. In general this appears not to be the case. Rather damages generally rise steadily with exposure both in environmental and other areas. This means that it is often very difficult to set such "thresholds." Still standards might be desirable as targets or goals, provided that compliance did not impose substantial costs. But compelling evidence exists, particularly in the environmental areas, that the costs generally rise very rapidly with the degree of abatement; thus suggesting that meeting a particular standard may impose very large additional costs while yielding only minor benefits. Of course some products or activities may be so hazardous or entail such risks that strict enforcement or even an outright ban is mandated.

Standards generally provide no automatic incentive to reduce external damages. Specification standards also do not encourage the adoption of least-costly options or the development of better technologies. This is particularly true for environmental problems, where standards provide only an incentive for delaying compliance and its costs as long as possible.

The vast array of product, occupational, and environmental externalities, and the millions of firms and individuals who contribute to or are affected by those problems, suggest that it will be very difficult for conventional regulation alone to produce progress. What is accomplished may be unnecessarily expensive, in the absence of incentives to internalize the external effects in the least costly manner.

A variety of mechanisms can supplement or substitute for standards-enforcement regulation. With proper information, collective bargaining between employers and employees may be able to deal with a wide range of occupational safety and health problems, as is increasingly being done here and abroad. Government enforcement resources could then be more heavily devoted to the nonunionized, unskilled, and highly mobile, who will generally be exposed to greater hazards. Individual or class action liability suits against producers, employers, or even polluters provide some degree of abatement incentive. But the incentives would be very uneven and substantial, and risk or damage could occur before settlement. Of course, such lawsuits can be effective only if causal responsibility is clear and supported by evidence. Strict manufacturer liability appears inappropriate, since many accidents cannot reasonably be attributed to faulty machine or product design, and such a system would be very costly.

Experience or risk-rated workmen's compensation or product liability insurance can provide incentives to take account of external

effects, and does compensate for injuries. However, only for quite large firms do workmen's compensation rates reflect actual experience, so the costs of many firms' accidents are borne in large part by others.

Taxes or fees could provide significant incentives for abatement of a wide range of external effects, from workplace accidents to highway and airport congestion to environmental pollution and the risks of future oil embargoes. The success of a fee approach depends on monitoring, but by comparison only very simple technology-based standards would have a significant apparent enforcement advantage. And if the required technologies did not operate as anticipated, this advantage would prove illusory.

Compared with standards, fees or penalties have several decided advantages. There would be automatic incentives to comply rather than delay, since that course would reduce costs, as well as a direct profit incentive to use the lowest cost method of abatement—whether this required capital investment, product or process changes, better operating and maintenance procedures, worker training, or use of different materials.

Fees or penalties encourage efficient abatement. Under such a system, low abatement cost sources will do a greater share of the abatement and higher cost sources will abate relatively less, thus reducing costs perhaps by as much as 50%. This may conflict with principles of equal "sacrifice." But the economic gains could be very large, and there need be no lesser achievement of goals unless the fee is set incorrectly or the level of abatement by particular sources was of concern.

Environmental use fees have been implemented in a number of countries as supplements to standards-enforcement. Taxes or fees appear promising as a potential remedy for a number of problems, including excessive automotive fuel consumption and pollution, sulfur dioxide emissions and airport congestion. Administrative penalties on work related accidents could also improve safety as could charges for hazardous substances in the workplace.

Incentives could be established by creating exchangeable rights to engage in the activity to be controlled. Like standards, a rights system is only as effective as the penalties enforcing it. Enforced by stringent penalties, rights would rigorously limit the activity and would be most appropriate for severe risks or irreversible damages, such as hazardous pollution or airport landing at peak hours. The EPA system of air pollution "offsets" implements a partial system of pollution rights and can encourage cost effective meeting of National Ambient Air Quality Standards. The offset policy has substantial promise and should be developed into a full-fledged market for pollution rights.

The incentive for automatic "compliance" from fees or taxes could be provided by "delayed compliance penalties" as implemented in Connecticut and proposed in the 1976 and 1977 Clean Air Act Amendments. Sources not meeting schedules would pay a fee set at the estimated saving in compliance costs. The notion is that the source would then have some incentive to comply. Estimation of penalties would be easy if compliance techniques were simple, but not otherwise. Such a system could induce compliance but unlike fees, it provides little or no incentive for cost-effective allocation of abatement among sources and would not encourage proper maintenance and operation.

Fees, rights and other incentives have been criticized as "licenses to pollute." This is a specious criticism. The standards-enforcement mechanism could also be characterized as such a license, since under that approach pollution (or other activities) is permissible provided the standard is not exceeded. And, in fact, a standard is closer to a "license" since some hazard or pollution is allowed at no charge. Fees have been criticized as imposing excessive financial burdens by requiring both abatement expenditures and payments for remaining pollution or other activities. But since fees induce cost effective abatement, lowering total abatement cost, this need not occur. And, environmental fees may lessen the burden of high abatement cost for small firms by concentrating abatement where its costs are lower. Overall, the arguments for incentive systems are strong. In some cases of enormous risks and irreversible consequences strictly enforced standards may be preferred. But even then, charges or saleable rights can provide incentives for reducing the hazards. Sometimes specification standards requiring major sources to use a particular technology can aid monitoring and indicate what is feasible. But there are compelling reasons to use the automatic and pervasive force of incentives to encourage rapid and efficient abatement of a wide range of hazards.

4. Problems of imperfect information

Correcting inadequacies concerning information is often a valid basis for government intervention of one form or another. The costs of providing information are not easily chargeable to those who are thereby benefited. For that reason, the market may underprovide information. So too, some producers and employers may view it in their interests to provide incomplete or inaccurate information. Adequate information is important. Without proper information, some decisions may result in undesired consequences or external effects. With good information many potential external effects will be internalized. For example, consequently workers may demand higher wages for hazardous work and consumers may avoid products known to be unhealthy. Imperfections in information can create monopoly power even without high concentration. For example, lacking information on alternatives, patients may necessarily have to reply on their doctors' judgments. In the case of doctors, licensure is supposed to assure competence and professional ethics guard against deception. It is not clear that this has been effective. Providing additional information may lessen this power.

Information has its limitations. It may not be available, or readily understandable. In the health area, information is often difficult to appraise, consequences are potentially severe or irreversible and causal relationships are frequently unclear.

Under these circumstances even well informed workers and consumers would find it difficult to bring pressure to bear on producers and employers for corrective or preventative measures. Some hazards, such as brake failure and some occupational diseases may affect third parties. Severity of consequences is not the only determinant of the usefulness of market information in determining hazards. Botulism can easily cause death, while salmonella poisoning generally does not. But botulism is easily traceable to manufacturers or home canners, and proper manufacturing makes it extraordinarily unlikely. In contrast, salmonella can be caused by a wide range of factors, is not readily

traceable to a particular source, and often has ambiguous symptoms. Since manufacturers responsible for botulism are identifiable, lawsuits, adverse publicity and potential loss of goodwill makes the case for strict regulation less compelling. That is not true with salmonella: it will rarely be traced to food manufacturers, even in instances where they are the source of the problem. Thus detailed regulation of production processes may be desirable.

Moreover workers and consumers sometimes choose to ignore risk, even if provided with reliable information. Government intervention may be required. For example, cigarette consumption continues despite well-publicized health hazards; but no driver may operate a vehicle at excessive speeds without facing possible penalties. In the latter case, information on the risk involved is coupled with sanctions to encourage compliance.

Indeed, information without something more is often inadequate. For example, risk of workplace injury is highest for newer workers who have had less opportunity to gather information, and high turnover industries have relatively high accident rates. Injured workers will leave jobs, depriving others of needed information. That problem can be aggravated by the nature of the occupation: unskilled workers may be easily replaceable at little cost. Therefore, high turnover industries employing unskilled workers may present relatively great hazards. All of which suggests that some combination of standards-enforcement efforts and information programs may be required.

Of course determining an appropriate supplement for information should involve consideration of various alternatives. For example, compulsory licensing of certain occupations has been justified by consumer inability to judge qualifications. But a testing and certification program would require only consumer ability to understand the grounds for certification or even less, to know that certification indicated some degree of competence. Although the seriousness of potential harm could justify a more stringent degree of government control, that potentiality clearly does not apply to even most occupations. So too, compulsory licensing requirements—as with all standards—can slow technical change and limit availability.

5. Information can be a substitute for regulation

Banning and specification standards are employed in some food areas where it appears that informational approaches could be used. For example, food ingredients, which exceed "defect action levels" (D.A.L.) for insect parts or other substances, are banned—even when the final product contains very small proportions of these foreign elements and processing eliminates any potential health hazard. Thus, purity, rather than safety, is the pre-eminent consideration. Perhaps the major justification for the present approach is the special emotional importance of food in our lives. Consumers may wish to believe that their food is pure—made from "clean" ingredients in a "proper" manner. But that course has its costs. In one case, lowering the permissible insect levels for fruits and vegetables increased pesticide contamination in some food products. The present approach involves setting standards for purity. A less costly alternative might be to inform consumers through government grading of food purity status, and thereby allow choice.

Much FDA food regulation is based on specification standards for ingredients and food manufacturing practice (GMP), which may unduly restrain technical change and limit product variety. In many cases, the GMP's are sanitation oriented, and generally any health problems would be eliminated in processing. Even if that were not the case, testing of final products in accord with performance standards could often detect safety or health problems. Although in some cases GMP standards might be cheaper, that is not always true. The strict standards-enforcement-banning regulation adopted might be more appropriate to rather potentially severe health or safety problems than to relatively harmless contamination. Even assuming a public preference for purity, an informational approach of "aesthetic grading" could increase food supplies and lower cost while satisfying various consumer tastes. Whether such an approach could satisfy consumer demands for purity or yield major cost savings is unclear.

Interestingly, an *informal* educational solution is taken to the control of a *serious* health hazard-trichinosis. Pork is not banned and warnings are generally not given. Rather, it is assumed that consumers will properly handle and cook the meat, even though serious disease may result from failure to do so. This appears contradictory with the banning approach taken to guard against food hazards which entail no risk to health. Yet, even though information may reduce the problem, banning dangerous drugs may be justified when consequences are potentially severe and irreversible. Such is not the case with meat from a bruised animal or mushrooms containing "excessive" insect parts. In economic terms, banning in those instances is justified only if the cost saving from not doing so would be slight.

Direct government requirement or provision of information can have adverse side effects. Were they to be implemented, some consumers may find the FTC's proposed mandatory disclosures of nutritional information helpful. But if, for example, the disclosure required substantial advertising time and effort, as initial proposals indicated, it would raise the cost of providing nutritional information and potentially decrease the amount supplied. Consequently, there will not only be fewer nutritional advertising claims but also less available information on that subject.

As previously mentioned, a major argument against the use of informational approaches is that they protect only those capable of appraising that knowledge, and may systematically disfavor the illiterate, the non-English speaking, or the less well-educated persons. But a standard-banning approach, which raises cost to all, may most adversely affect the same groups, who might be quite willing to sacrifice some food "purity" for lower cost. Similarly, imposing very safe working conditions may lower wages below what they would be otherwise. And some low income or other workers might, if given a choice, prefer greater risk in return for higher wages. Thus, in that situation, worker interests may not be met either.

With accurate and comprehensible information workers and consumers have a basis to make informed choices. Considering the low expected penalties for violation of OSHA standards and the uneven evidence on the effects of FDA inspections, it appears unwise to rely on standards alone. To do so can impose undue costs and rigidities,

which possibly could be avoided by better information. Attempts should be made to increase market pressures to reduce hazards. Required disclosure of product attributes and workplace conditions can aid this process. Moreover, the standards-enforcement-banning approach appears generally best reserved, as in the environmental area, for hazards with severe and irreversible consequences or the potential for substantial adverse effects on third parties. Certain drugs may meet these criteria, as may unsafe automobile tires. But many food products do not, and only some occupational health hazards meet the criteria which could justify a pure standards approach. Information and incentives can at least complement, if not entirely replace, the traditional approach to problems of occupational and product safety and health. Certainly for many occupations, certification which takes account of consumer information needs could replace compulsory licenses that are now required.

In summary, government does have a role in assuring the provision of useable information on product and workplace hazards. That purpose could be accomplished either by mandating disclosures or by direct government dissemination of suitable information. However, where risks are great or particular groups are especially susceptible, an information approach without something more may be inadequate. In those cases, information could be supplemented by standard setting compulsory licensure, and possibly even banning certain products, processes or substances.

6. Regulation of natural resources

When producers have a "common pool" resource—such as a petroleum reservoir, a radio frequency band, or a fish supply—there is a clear and valid rationale for government intervention. That is so, because in that situation one firm's use may directly reduce another's, and free competition under the rule of capture can lead to excessively rapid overuse. The "common pool problem" arises in part because producers do not take account of the effects of their actions in decreasing others' production—that is, they may undervalue the resource provided by the pool. The logic of this externality is similar to those discussed above, and applies to highways, airports, and the general environment as well as to oil reservoirs and fish. Regulation has been justified in order to control such use. However, oil prorationing, a principal example of regulation justified on this basis, served to unduly elevate prices, restrict supplies and create inefficient and excessive capacity. A possibly preferable alternative would be "compulsory unitization", requiring operation of the pool as a unit. Yet that could involve potentially collusive contacts among producers.

Still another solution would be for government to levy a fee per unit use of the pool. The fee could be adjusted to achieve the rate of use considered appropriate. Alternatively the government could sell (or grant) transferable rights to the pool, and thereby assign quotas. Both such systems could result in efficient use of the pool and would allow the public to receive some of the resource's scarcity value.

A system of allocation of radio frequency spectrum by competitive auction could achieve similar ends, assuring that limited spectrum space went to high value users. Some direct regulation might still be necessary to prevent interference, and competitive allocation might not

solve the tendency of stations to program in accord with what is perceived popular tastes.

Thus this rationale like some others is clearly valid and the issue is which of the available alternative approaches should be adopted in order to accomplish this objective.

7. Regulation to control the distribution of unearned income or windfall profits, and shield consumers from high or increased prices

Price controls as a variety of regulation have been imposed in order to protect consumers from higher costs, thus distributing economic rents—returns over and above what is necessary to maintain production—away from producers.

For example present regulation of oil and gas prices clearly prevents some producers from receiving economic returns above those required to maintain production, and thus transfers income to consumers via lower prices. The total transfer is very large, something on the order of $30 billion per year. However the net gain to consumers is less because the resulting shortages mean that many consumers must do without natural gas. Even at higher prices, some evidence suggests that phased decontrol of gas prices could yield consumer benefits of over $2 billion per year. There are other negative economic effects. The "rolling in" or averaging of prices of old and new oil and gas mean that prices are below the cost of extra supplies. This encourages consumption and, hence, potentially risky oil imports, and may impose additional costs of $1 billion per year. The multiple tier pricing of oil has led to a complex system of "entitlements" and regulations which have frozen customer-supplier relations, reduced competition and may have led to the construction of inefficient refinery capacity.

In addition, gas price regulation has led to shifts of industry to producing states, possibly increasing total costs. Recently passed legislation should mitigate these effects. Yet, even considering all of these distortions, price controls almost surely have transferred income to energy consumers. But keeping consumer energy prices down conflicts directly with other goals, such as conservation and reduced oil import dependence. And it is possible that the total costs of energy regulation will consume a very substantial part of the consumer benefits which price controls are supposed to achieve.

Thus the basic problem is that controls, which keep prices below levels dictated by scarcity and costs, generally cannot yield net economic gains. Consumers may gain at the expense of producers but, overall, there will be a net loss, as output declines and commodities are kept from their highest value uses. While control of *monopoly* prices can yield net benefits by increasing output, holding *competitive* prices below market levels cannot have the same result. In the case of oil, the cost of extra supplies is set by OPEC, and is not directly affected by domestic price controls. If they have any effect, controls probably increase the price by encouraging U.S. demand for imported oil. An OPEC-type effect on energy prices is possibly the most devastating single price increase. Oil was and is the largest single item in international trade, and direct and indirect energy costs are a substantial proportion of individual family budgets. Thus it is difficult to argue that the government should in this regard do nothing. A truly massive crop failure could have similar effects: producers would gain at consumer expense, and some would receive more than needed to

induce production. But in the food example, the problem is a decline in real supplies, something which is beyond the ability of price controls to alleviate. The energy situation is roughly similar, in that the problem is an artificially imposed high price which domestic price controls cannot beneficially affect.

In the short run price controls could shield some consumers from drastic impacts—but rationing may be necessary and, if total supplies fall (or costs rise), someone must bear the burden. By preventing reallocation price control can increase the total economic burden of the crisis. If the crisis persists for some time, as has been the case with the high OPEC price, maintaining controls can cause serious inefficiencies. Though real costs have increased, consumers will not have full incentives to adapt, and vested interests dependent on regulation will form. Production may be restricted by the low prices, and stocks or reserves may be held off the market in speculation on future relaxation of regulation. All of these effects can impose extra rigidities and costs, and make ultimate reform difficult.

Stockpiling for future crisis could alleviate the most severe short run impacts. Another alternative would be to require that all such controls be strictly temporary and be phased out according to a definite timetable, with prices to rise to market levels. This could be achieved by allowing price increases within a given range—for example, 10 percent within the first three months, 20 percent within the first six months, and so forth. A preannounced schedule would encourage consumers to adapt, but would also prompt production cuts and speculation. As a preferable alternative, prices might be gradually deregulated and (equivalent) excise or "equalization" taxes phased in at the same time. This would raise consumer prices while keeping producer prices down, and could reduce tendencies to withhold or speculate. Such proposals were made as part of President Carter's Energy Program though equalization taxes were not adopted. The *ideal* results of such taxes would be that users would pay market-clearing competitive prices, while producers would receive only the amount required to induce production.

Determining the appropriate producer prices and taxes will be difficult, and mistakes can cause undue restrictions on production as well as escalated real costs. Present and proposed regulation recognizes cost differences between old and new gas and oil, among other categories. But enforceable regulations will not be able to recognize all of the economically relevant distinctions, so production will probably be restricted. Even with complete knowledge of costs, prices cannot be held down in the long run while maintaining production, if there are not substantial economic rents. These are likely to be present principally in agricultural and resource industries. Manufacturing and most service capacity and output can generally be expanded at relatively constant long run costs. Classes of exceptions include highly trained professionals such as doctors, whose supply cannot be rapidly expanded. The advent of national health insurance could lead to large windfall returns to existing physicians. Other exceptions may include goods produced by patents and other monopolies. Rapid, drastic escalations of price appear unlikely for most such goods; and most do not account for a major share of consumer budgets.

Unless tax receipts are returned to consumers, they will not be "protected" from the price increase. Full and exact shielding or compensation will be both difficult and inappropriate. If the compensation is exact, then consumers will have little incentive to economize on the newly scarce commodity. But compensation in rough proportion to increased expenditures—at least for relatively broad classes of individuals—could preserve some incentive for economizing. Future price control schemes should not incorporate the averaging or "rolling in" of controlled and uncontrolled prices without some type of equalization tax. For greatest cost-effectiveness in conservation, all users should pay the same price for incremental use of the commodity or service in question. This may conflict with notions of fairness and equal sacrifice, but greatly reduce the costs of achieving the ultimate goal. Distributional effects might best be handled by identifying classes deserving of relief and granting this relief independently of use of the affected product.

Because of the potential for severe and self-defeating distortions, controls should not be imposed unless the need to protect consumers is clear and compelling. But it is in just these cases where preserving and improving incentives is most important, because when consumer impacts are substantial incentives to conserve are correspondingly important. Therefore, controls should, except *possibly* for very short-lived problems, be combined with appropriate equalization taxes. These taxes should insure that all users and producers face appropriate incentives. Because of the danger of creating vested interests and "needs" for evermore elaborate and extensive systems of controls, regulation and offsetting systems of compensation and subsidy "shielding" of consumers should not be undertaken lightly.[1]

8. Regulation to prevent destructive competition

Properly viewed, "destructive competition" should be based on a social harm resulting from competition. Thus evidence of that market condition requires something more than mere business failures: bankruptcies *per se* generally are not indicators of socially harmful competition, and, more often than not, are part of the normal market process of eliminating the inefficient and of adjusting to change.

"Destructive" competition can occur in a situation marked with persistent losses and excess capacity in industries with high fixed costs or immobile capital. In such situations technical progress and maintenance may be poor, as may now be the case with eastern railroads in the United States. Although railroad regulation was in part prompted by price wars and discrimination, it is not clear that competition was as much socially destructive as it was unpleasant to producers, who preferred high, stable profits. When regulation was established railroads were one of the few heavily capital intensive oligopolies, and managers may have been unfamiliar with rational pricing methods. In addition, the market was new and growing and aggressive jockeying for position was to be expected. The passage of time has changed that situation dramatically. Without regulatory constraint of abandonments, railroads would not now be burdened

[1] This conclusion is shared by the draft report of the American Bar Association's Commission on Law and the Economy, Federal Regulation; Roads to Reform, op. cit., pp. 75–80.

with so much excess capacity and maintenance and progress would surely have been better. Also railroads face intense competition from truckers. Moreover few routes have several competing roads. Consequently very intense or "destructive" competition, with only a few exceptions, is unlikely as there is little potential monopoly profit to be gained. Airlines and trucking have very mobile capital and, absent regulation, easy entry and exit. As a result, long periods of loss are very unlikely absent regulatory controls.

Competition could also be "destructive" if monopoly or high concentration resulted. Yet, it might be economically most beneficial to allow such concentration to occur, subject to regulation or other controls. Even so, the likelihood of such concentration is remote in many industries. For example, while on most routes railroads are already natural monopolies, any rail market power is generally constrained by trucking. Deregulation of trucking would provide even further competitive restraints on any rail monopoly. High concentration of trucking appears most unlikely as scale economies are small. Although many airline routes would continue to be served by one or few firms, easy entry would severely limit monopoly power. Similarly, there appear to be few scale economies which would greatly increase concentration. None of those candidates for deregulation are likely monopoly industries. However it is true, that abolishing the entitlement system could disadvantage some smaller petroleum refiners. But it is not clear how much this would affect competition in the petroleum industry. The freeing up of customer-supplier relationships could enhance competition, particularly in retail gasoline markets. Moreover there are other effective ways of restraining undesirable tendencies toward concentration. Antitrust monitoring of mergers would of course be important; and deregulation that included abolition of the various antitrust exemptions presently enjoyed by regulated industries would bring stricter and more competition-oriented antitrust enforcement.

Competition by selective predatory price cuts could be destructive. However, with relatively easy entry into deregulated trucking and rail markets, predation would be very unlikely to pay. For example, in railroads, trucking competition is for the most part sufficiently vigorous to prevent the subsequent monopoly exaction which could make predation pay. A direct cost floor under prices could greatly reduce any risks.

"Destructive" competition has other possible dimensions. It is true that growth of cable television would adversely affect some over-the-air broadcasters. But the number of threatened stations is very small, and few if any would as a result leave the industry. Even if that did occur, consumers would lose little in program variety or quality. The use of certain competitive devices as adjuncts to the telephone system could conceivably cause technical problems. And that may be a proper rationale for the setting of technical standards, but not for the prevention of competition.

Overall, harmful "destructive" competition is more a fear than a reality. Incidents of that condition have been rare and perhaps nonexistent. Perhaps, during the Great Depression, entry into such fields as trucking might have been excessive. Certainly the full panoply of present ICC regulation is not justified on the basis of

that somewhat unlikely eventuality. Harmful destructive competition appears most unlikely following deregulation of most of the potentially competitive regulated industries. Whatever problems might arise in this regard can be addressed by antitrust enforcement.

Where depressed prices would be painful or business failures undesirable, alternatives to present regulation appear available and generally preferable. In industries with substantial immobile capital, long periods of depressed prices might be considered too painful even if not harmful to economic performance. Standby price controls or, better in terms of promoting efficiency, adjustment assistance, appear preferable to continued regulation.

Surely, business failure can in some cases cause serious social harm. Examples include banks, insurance companies and other firms with fiduciary responsibilities; hospitals and nursing homes with ongoing responsibilities; and firms with unique expertise or importance, such as to the public health or national defense. In addition to imposing losses on individuals, massive bank failures could contribute to recession. But insurance combined with inspection and possible temporary assistance appears sufficient to deal with those problems, thus leaving at best a limited role for regulatory controls. Bankruptcy of course does not necessarily destroy knowledge or expertise. For example, if preservation of a research team was considered vital, successor firms would surely preserve it without any government inducement. Firms deemed essential for some important national purpose could, if absolutely necessary, be aided by special legislation. Public enterprise, adopted as a solution to "sick industry" problems is another option.

In summary, social harm from excessive or "destructive competition" *alone* appears most unlikely in most unregulated industries, and does not justify the types of price and entry regulation now applicable to railroads, airlines, and truckers. Insurance or temporary subsidy and assistance could prevent sudden shutdowns of vital or essential firms or activities. Adjustment assistance and partial compensation for losses can ease difficult transitions. Indeed, viewing the prevention of "destructive" competition as part of their mission, regulators have frequently forbidden healthful competition and technical innovation. Yet conceivably an industry could develop in which capital was so immobile and large, the technology so susceptible to competitive incursion, and the consequences of failure so enormous that detailed economic regulation would be required. Such an industry does not now exist.

9. Regulation to allow and foster cross-subsidy

Assuring service to particular groups or communities is a continuing justification for regulatory controls on rates and entry. Of necessity that often implicitly entails cross-subsidies, transfering income from profitable business activities to less remunerative areas. Thus, in a sense, regulation based on that objective must foster cross-subsidies, with resulting higher prices for some in order to support otherwise unprofitable service. A further indirect effect is that entry controls, which impede competition, must be used to protect the profits necessary to finance the cross-subsidized service.

A regulatory approach, which depends for its success on cross-subsidy, is inefficient and unpredictable. That is so, because the actual pro-

vision of service varies with firms' discretion and market conditions. For example, increased trucking competition drastically reduces railroad monopoly power, thus curtailing resources available to cross-subsidize unprofitable rail service. But there is no reason to expect the "need" for such service to have decreased at the same time or to the same degree.

Moreover cross-subsidy is likely to be inefficient in terms of service provided. Prices must necessarily be elevated above costs for some activities—and if prices are regulated and the business is not a monopoly, service competition will raise costs and dissipate the potential "subsidy fund." That situation has occured in airlines and probably trucking. And without detailed regulatory control of service, there can be no assurance that the allowed monopoly return will, in fact, be used to cross-subsidize. Because cross-subsidies are "invisible" and paid for by others, there is little restraint on claimed "needs" for service.

Claims of cross-subsidized service to small or rural communities is often used to justify regulatory controls. It is possible that some small communities might face dislocation if, for example, rail service were discontinued. But adjustment assistance appears a more appropriate remedy for that situation. However, the likely availability of truck service means that possible disruption would be slight. In fact, significant cross-subsidy of any sort, and to small communities in particular, does not seem to have resulted either from ICC trucking or CAB airline regulation. Service and scheduling are not regulated and even if they were, enforcement would be most difficult if not impossible. Also the costs of providing air, rail and less than truckload motor carrier service to small communities are relatively high. If rates cannot reflect this cost, regulation will induce *worse*, not better, service to small communities, compared with unregulated markets. Thus, the issue of "service to small communities" is in a sense meaningless. Instead the real issues are "at what price" and "who should pay?" There is no reason to expect a lack of service to small communities, provided that consumers are willing to pay and regulation allows rates to reflect actual cost.

Direct subsidies is the prime alternative, although if they are unrestricted the result would be excessive demands for service. Containing such open-ended subsidies were original justification for airline regulation, and have increased the perceived "need" for regulation. More effective alternatives are available. For example, competitive bidding for limited duration franchises or direct contracting—both for specified service—would constrain the amount of the subsidy while also assuring provision of particular service. Any such proposals should include some form of cost sharing by the local community or other subsidized group. Other alternatives are available, including special tax credits for service to identified groups. This would lack the efficiency incentives of contract bidding proposals and would be less visible and less easily monitored than direct subsidy. Public enterprise is another possibility, though that would entail problems of accountability, predictability and efficiency similar to regulatory cross-subsidy. If this option were adopted, the amount budgeted for such subsidized service should be made explicit and the provision of service closely monitored.

Finally, in determining whether either direct or indirect subsidies should be granted, there is of course a basic threshold question: does

the social gain justify the cost? Clearly that issue can be more readily confronted with direct subsidies drawn from public funds, than in the case of cross-subsidies not subject to budgetary review and typically financed by others than those who benefit. That in itself—in other words, this opportunity to pose and consider that threshold issue—is an important reason why a cross-subsidy approach is not desirable.

10. Regulation to promote key industries

Regulation has been justified in order to promote industries, including aiding development of civil aviation, and preserving a U.S. flag merchant fleet and domestic shipyards. How might price and entry regulation promote? It could be argued that controls, by reducing the risk from entry or competition, allow investors in risky enterprises to reap rates of return high enough to justify the investment. This argument parallels the basic justification for the patent system, which is designed to encourage invention and innovation. But, like patents, the rationale clearly applies only to new and risky ventures. Patents, after all, confer monopoly rights only for 17 years, not forever. Thus the justification might have been valid, for example, during the early years of civil aviation but surely does not apply today.

Regulation might also shield an industry from lower cost competition and, by preventing substitution, increase its size. This would be clearly effective in the case of foreign competition, which could reduce the size of the U.S. flag merchant fleet and associated shipyards. Another possible example would be prevention of truck inroads into rail traffic, if railroads were deemed more essential to some national purpose. But in most cases there is a clear conflict between industry promotion, and the high prices and restricted output that result from regulation.

Using regulation to "promote" a key industry means that controls may acquire undue sanctity. Subsequent efforts to eliminate or relax regulation will be seen as endangering some key interest and will be resisted by those who are adversely affected. Regulators may find it easier to justify extension of regulation to competing industries when their "key" industry is threatened. This argues for methods of promotion which are more carefully focused on the interest to be promoted.

Direct subsidies appear more appropriate measures to promote key industries, should that be desired. With that approach the amount can be monitored, and side effects kept to a minimum. If the activity to be promoted serves a general national interest, then public financing appears more appropriate. Direct subsidy is also likely to be more effective, and predictable in outcome regulation than to promote, and the full panoply of regulatory controls is not needed. Instead, franchise bidding, or contracts subsidy of specified quantities of service can achieve the same ends without unneeded and burdensome restrictions on pricing and technical progress. So too, if the "public interest" which justifies promotion is largely local—as in the case of air or trucking service—some form of cost sharing is important to prevent excessive demands for subsidy.

However the task of subsidy—or even the most detailed regulation—will be a good deal more difficult if the goal is to increase profitability for a long period of time. Subsidy alone will induce entry and increase service until normal returns occur. The initial recipients of subsidy

will receive higher profit rates, which over time will decline to more normal levels. Thus ever increasing subsidy—or ever tighter regulation—would be required to maintain the initial high rates of profit. Thus, whatever approach is adopted, assuring high profits is, due to inherent difficulties, an inappropriate objective of promotion.

Overall, regulation is undesirable as a promotional device. If it is used to reduce risk or limit subsidy in new industries, experience indicates that controls should explicitly be temporary in nature. Long term promotion—as of industries considered vital to defense or national security—by regulation appears needlessly expensive. Direct subsidy, as limited by contract or bidding, appears far preferable.

11. Regulation to control competing industries

Two main arguments are often advanced for imposing controls on competitors of regulated industries. First, it is argued that otherwise economic harm to the public would result—in other words, efficiency would be seriously diminished unless both industries were regulated. In theory, the argument has some merit. If the goal of regulation is to obtain a certain output of a good or service, and as a result demand shifts to a competing industry, the purpose may be defeated. Thus, if pollution controls were applied to only one industry, thereby raising its prices, demand would shift to a competing industry which was free to pollute. Thus, if controls are aimed at solving a social problem, common to an industry and those related to it, it may be proper to regulate that entire sector. Otherwise, interactions could heighten the problem.

However, regulation may be but one solution to the problem in question. A preferable course may be regulation of *neither* industry. But, to cite an example, if regulation holds rail rates above cost then customers may shift to trucks, even though higher social costs are involved. The customers may gain, but the result could be wasted resources. The best solution is to allow all rates to equal costs, including a normal profit. Regulation of the truck industry, raising price above such costs, could possibly lower the total cost though transport users would suffer. Substantial intermodal shifts from railroads to trucking have occurred in the past. But today truck costs are not above rail costs for most distances and truck deregulation would probably have little effect on railroads. In addition, since truckers are free to compete on service quality, rail protection may have been slight. While plausible in theory, such arguments ignore the substantial costs that are imposed by regulation in terms of excess capacity, restraints on technology, distorted prices, restricted competition, and elevated costs. In that light, it appears most unlikely that the extension of economic regulation to competing industries can be justified on grounds of improving efficiency. It is certainly inferior to using a more direct and less costly way of meeting a national need.

The second major argument for this justification is that regulation of the competition is needed to protect those already subject to controls. In the 1930s, railroads actively lobbied for trucking regulation, and the FCC appears to have regulated cable in large part to protect broadcasting interests. The effort to protect railroads by regulating trucks did not succeed, and may have accelerated the shift to trucking. Shielding broadcasting from cable may have been more successful. Regulation can shield firms from some competition and thereby some-

what reduce risks and make profits more certain. Yet that is accomplished at great cost, particularly when controls are extended to industries with no underlying problem.

In summary, there are few if any cases where regulation of competing industries is desirable to protect the public interest. This rationale is one of dubious vitality.

12. Regulation to preserve property rights

Once established, regulation tends to spawn and then protect groups, which then have a vested interest in its continuation. Thus, avoiding allegedly adverse economic consequences to those interests sometimes forms a major justification for regulatory controls. As a result of regulation, firms or individuals may have acquired "property rights", such as trucking certificates and broadcast licenses. Investment decisions may have been based on expectations of regulation-influenced costs or demands. Such property rights associated with regulation are often very valuable. Continuing regulation will generally insure only normal returns in sectors where entry, service competition, or significant substitution can occur. If regulation were eliminated or relaxed some would sustain capital losses, and others might be burdened with high finance charges for assets with lowered value. For example, negotiated brokerage rates required by the SEC appear substantially to have lowered the value of seats on the New York Stock Exchange. In environmental controls, a shift to effluent charges could adversely affect firms accustomed to free use of the environment.

Regulators have often gone to great lengths to protect their charges—even against each other. The ICC restricted unit trains until it appeared that they would be profitable for all of the major coal-carrying railroads. And the CAB did not approve the entry of a new trunk airline during the first four decades of its existence. So too competition has frequently received little consideration in merger proceedings before regulatory bodies, and carriers have been restricted from adjusting prices for fear of damage to other regulated firms.

It is questionable whether regulation is necessary to provide continued protection of secure positions or to guard against losses. In some cases deregulation may benefit the industry as a whole. In other cases, individual regulated firms will gain. For example, adoption of effluent fees will benefit many firms which had previously been required to utilize inefficient abatement methods or to incur excessive costs meeting established standards. Maintaining regulation simply to protect existing interests also means that consumers and others will make continuous payments to these groups, all of which will often be far in excess of the gains to the protected group. Much of the potential will be eaten up in service competition, inefficiency, and efforts to preserve regulation. Should it be determined that some group is deserving of support, it will generally be cheaper to provide for them by direct subsidy than by continued regulation.

Yet there may be a responsibility to those who have invested on the basis of expectations as to regulation—in much the same way as Government has assumed some responsibility to aid those damaged by increases in imports. The issue is similar to that of appropriating economic rents for consumers by controlling prices. Temporary aid or

protections may be proper, but permanent shielding is likely to impose increasing costs and distortions.

If regulation does not address a real social problem, then there can be no net gain. Yet compensation for the effects of change can increase incentives to demand regulation and re-regulation. Adjustment assistance will have some of these effects but to a lesser extent.

Compensation has other inherent problems. The thorny issue of who is entitled to compensation will have to be addressed. And the answer to the question is not at all clear. Firms in an industry will be affected quite differently by regulatory changes, so compensation or even assistance to all will not necessarily be appropriate. For example, some of the regulated, particularly those who may have received certificates "free" or who entered before the industry was regulated, may have already gained substantially. Thus broadcasters in operation prior to FCC regulation received essentially free licenses. Although now very valuable it can be argued that these broadcasters have already been "compensated" for possible regulatory changes. However, short run impacts can be substantial, so even though potential benefits are reduced, regulatory changes should generally be gradual, and follow pre-arranged schedules.

Indefinite continuation of regulation simply to preserve "property rights" in regulation is a most inefficient way to redistribute income. Like complete compensation, it provides inappropriate incentives for industries to seek regulatory protection. Just as consumers may deserve temporary protection from drastic price increases so may regulated firms and their workers, stockholders, and communities deserve protection from sudden drastic shifts. But neither permanent protection nor permanent regulation are justified by this rationale.

C. Adequacy of Justification for Present Regulation

In conclusion, existing regulatory approaches appear to be justified in but a limited number of areas.

Rate and entry regulation are appropriate tools for controlling monopoly power, in order to restrain excessively high prices and resulting output restrictions as well as to prevent undue price discrimination. However, the firms so regulated must in fact constitute natural monopolies and, absent that, the consequence will be substantial direct and indirect regulatory costs with no commensurate benefits to society. In addition, even where justified, regulation should foster innovation, and should whenever possible allow if not require that rates reflect actual costs and that competition occur. It should also be recognized that technological development may alter the situation, by reducing monopoly power which formed the original justification for regulatory controls. Thus periodic reappraisal is clearly necessary.

Insuring that firms and individuals take full account of the consequences of their actions may also serve as a valid rationale for regulation. A standards-enforcement approach possibly is a preferable choice if potential risks are grave and consequences severe or irreversible; in other words, where either certainty of result or some definite threshold level of achievement is considered necessary and desirable. However, even under that approach, it is critically important to evaluate and understand the relative merits and drawbacks of specifi-

cation versus performance standards. The latter permit flexibility to determine the least costly method of achieving a required goal, encourage innovation, and result in far less burden on agencies in terms of expertise in particular areas. On the other hand, truly severe risks may suggest the need to actually specify by standards particular technologies, processes or products. Also incentives may be a valuable complement to standards in order to achieve a particular goal without the costs of detailed monitoring and enforcement. As the severity of risk declines, and the certainty of result is less essential, the desirability of an incentive approach increases. Thus fees, delayed compliance penalties, tax concessions, exchangeable rights and other systems can be effectively utilized. Although internalizing external effects may justify regulatory controls, it is of course advisable to weigh such alternatives in the context of specific situations.

Similarly the public need for usable information may under certain circumstances necessitate government required disclosure and labeling. Concern for particularly vulnerable groups, such as the poor or the illiterate, coupled with the possible inability and unwillingness of the private sector to provide adequate information, could justify that action. So too, the presence of risks, which could be avoided by proper knowledge, might also mandate informational requirements. Information thus has some of the automatic quality of incentives; in other words, it can naturally prompt a certain response. However, like incentives, the existence of potentially severe risk or irreversible consequences suggest that information, without something more, is inadequate. Under that circumstance information might be properly supplemented with vigorously enforced standards and possibly suitably designed incentives. Finally it may be appropriate for government itself to actually provide information as a more effective means of communication.

Preventing the overuse of natural resources to society's detriment may justify regulatory controls. In a "common pool" situation, unfettered competition could dissipate or nullify the resource. Thus some controls over use are desirable, although they should be rigid only to the extent that is necessary to avoid wasteful or destructive overuse. In some cases, however, proper conservation can be accomplished through imposition of user charges. Price controls have a similar limited justification: they may be necessary for perhaps a short period of time to shield people from particularly drastic cost increases. Yet such controls may undesirably restrict production, and directly conflict with the need to economize on the use of scarce or dwindling commodities. Therefore an important long-range purpose—conserving critical resources for their most important uses—may be sacrificed merely in order to soften or delay an inevitable occurrence. For certain, if price controls are imposed, their duration should be limited and subject to phasing-out with the use of appropriate taxes to capture excess profits for the public good.

Other rationales for regulation have much less utility. In general, there appears to be little justification for regulation to prevent "destructive" competition, control competitors, promote "key" industries, insure service to particular communities or groups through cross-subsidies, or to preserve property "rights." Except for the last of these proffered justifications, present regulation aimed at these goals often

is either unnecessary or ineffective. Also in most cases, it appears that alternatives are both available and preferable. Thus, promotion of industries and assuring service might be better accomplished through direct subsidy, which would generally be simpler and cheaper. Preservation of property "rights" or expectations created by regulation is more an issue of distributive justice than economic performance and efficiency. As with price controls, the key questions are the extent of protection or compensation that should be given and the costs which should be incurred to do so.

Moreover, attempting to accomplish these goals by regulation necessarily requires significant restraints on competition, which in turn elevates prices and costs, and inhibits innovation. Also vested interests are typically created and nurtured in the process, thus making it more difficult to conduct meaningful appraisal and institute what could be necessary reform. Indeed, that kind of evaluation is very nearly impossible with the justifications concerning promotion and cross-subsidy. That is so, because the costs are indirect, invisible and not subject to budgetary review; and hence any appraisal is necessarily speculative.

D. Hospital Costs in the Framework of Federal Regulation: The Criteria Applied

This concluding section applies the framework for regulation, developed in this report, to hospital costs, an area presently not subject to Federal controls. Hospitals are now, of course, regulated under a wide variety of federal programs, particularly Medicare and Medicaid, as well as state and local certificate of need, accreditation and other programs.[2] But, with the cost of per patient day of hospital care increasing at an annual rate of about 15 percent,[3] this "inflation" is considered by some to be a crisis requiring both immediate action and long-term solutions.[4] Whether the Federal government should undertake to remedy that situation through regulatory controls is the principal inquiry of this section.

Without question, there is substantial consumer and taxpayer concern over this matter. In a Louis Harris poll released in March 1978, cost was considered by respondents to be the most serious problem with present health care programs, and the single most overpriced item identified was hospital services.[5] Widespread public interest is reflected by a number of current proposals pending in Congress, which will be discussed later in this section, to control the rising hospital costs.[6]

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[2] See Clark C. Havighurst, ed., "Regulating Health Facilities Construction," Washington: American Enterprise Institute, 1974.

[3] Council on Wage and Price Stability, Staff Report, "The Rapid Rise of Hospital Costs," by Martin Feldstein and Amy Taylor, Washington, D.C., January 1977, page ii. (Hereinafter cited as "The Rapid Rise of Hospital Costs.") Information provided by the Voluntary Effort, an industry related group, indicates that expense per patient day increased at an average rate of more than 13 percent between March 1977 and March 1978.

[4] U.S. Senate, Committee on Finance, Subcommittee on Health, Hearings—"Hospital Cost Containment and End-Stage Renal Disease Program," October 12, 13, and 21, 1977, page 146. (Testimony of Hon. Joseph A. Califano, Jr., Secretary, Department of Health, Education and Welfare.) (Hereinafter cited as Hearings—Hospital Cost Containment.)

[5] Quoted in National Journal, June 17, 1978, p. 978.

[6] These include the Administration's proposed "Hospital Cost Containment Act of 1977", H.R. 6576, introduced April 25, 1977; S. 1391, the President's proposal as amended by the Senate Committee on Human Resources; the "State Cost Control Plan for Hospitals Act of 1977", S. 1878, and Senator Talmadge's Medicare-Medicaid Administrative Reimbursement Reform Act," S. 1470. These proposals are summarized in U.S. Senate, Committee on Finance, Subcommittee on Health, "Selected Hospital Cost Containment Proposals: Major Provisions," Oct. 11, 1977.

Those concerns appear justified. First, it is clear that the costs are large. Recent data indicates that in fiscal year 1977, expenditures for hospital care totaled $65.6 billion.[7] Another year of 15 percent inflation in cost per patient day could raise the expense by over $9.8 billion; on the other hand, reducing the rate to 9 percent—a figure sometimes considered by government officials to be acceptable and attainable—could save almost $4 billion annually. Moreover, hospitals provide what are thought to be essential services, thus the impact of such increases can be especially severe. There is a further reason for government concern, since much of the cost is paid directly or indirectly by taxpayers through various subsidies. Also it appears that the market for hospitals functions ineffectively in several regards: consumer information is sparce or inadequate; the widespread use and availability of insurance provides little incentive to consider costs and alternatives; and the predominance of not-for-profit firms in this field may have an adverse impact on efficiency. Finally, dramatic increases in hospital costs certainly are a contributing factor to overall inflationary pressures.

While much of the adverse impact is apparent, it is not clear that such cost escalation can be justified on the basis of the need to provide appropriate quality of medical care.

1. Key features of the hospital cost problem

The costs of health care have increased dramatically in recent times. In fiscal 1977, total health care expenditures were $162.6 billion.[8] Of this $65.6 billion, or 40 percent, went for hospital care.

The dramatic nature of the increase of hospital costs can be illustrated by comparison with other economic increases. For example since 1965, while total health care costs quadrupled, hospital costs increased about fivefold. Per capita hospital expenditures have risen at an average annual rate about 2 percent greater than health care costs generally. The general level of consumer prices has risen 125 percent since 1950, while the cost of a day of hospital care has risen in the same period more than 1,000 percent. As a result, between 1950 and 1976, the constant dollar cost of hospital care rose by a factor of five while the real cost of hospital care has risen at an average annual rate of 6.2 percent, thus more than a doubling of actual cost in the past ten years. The rate of increase of the real cost of hospital care has risen in recent years.[9]

What accounts for the spiraling costs of hospitals? Wage and other expenses have increased, but they are only a fraction of the overall escalation. For example, had hospital workers' earnings risen only as fast as those of private nonfarm production workers, the annual rate of increase of hospital cost per patient day from 1950 to 1975 would have been reduced from 9.9 to 8.8 percent.[10] Between 1967 and 1977, above-average increases in hospital workers' earnings have been responsible for only about one-fourth of the increase in hospital costs in excess of general price increases, and price increases for materials, equipment and utilities also accounted for a relatively small proportion

[7] Robert M. Gibson and Charles R. Fisher, "National Health Expenditures, Fiscal Year 1977," *Social Security Bulletin*, July, 1978.
[8] Ibid.
[9] The Rapid Rise of Hospital Costs, op. cit., pp. 1, 9.
[10] Ibid., p. 13.

of the total cost escalation. Thus neither wage nor price increases are a major factor here. Rather about three-fourths of this increase is due to the expansion of resources used for each day of care provided. In other words, more equipment and possibly greater availability of service, combined with perhaps less efficient use of what exists, account for most of the relatively excessive inflation of hospital costs.[11]

Conceivably, this is the result of a situation where patients are demanding, and in response hospitals are supplying, increasingly costly and expensive health care services. But if it was simply a matter of increased demand for which patients were willing to pay the full cost, there would be little rationale for government intervention. Yet neither real incomes nor demographic characteristics nor basic medical technology appear to have changed rapidly enough for this to be plausible.[12]

The true explanation appears to lie in the peculiar features of the health care sector, which seemingly interact to make this inflation possible and perhaps inevitable. Because of subsidies and insurance, third parties initially pay for much of health care. This means that neither patients nor doctors are faced with the full cost of health care services. Thus, regardless of the nature of available information, patients tend to demand more complete and more sophisticated care than they would if faced with the full costs of treatment. Third party payment (that is payment by insurers and government) has risen dramatically from about 29 percent of total health care expenditures in 1950 to almost 67 percent in 1976. Put another way, direct private payments, for health care have fallen from 68 percent in 1950 to 32.5 percent in 1976. In that regard, the situation has been even more marked for hospitals. In 1950, almost 50 percent of hospital costs were paid directly by consumers. By 1975 the share had fallen to under 12 percent, with private insurance and government each paying about 44 percent.[13] And in fiscal 1977 third party payers financed 94 percent of hospital care, a much larger proportion than for any other category of health expenditures.[14] Deducting both government and insurance company payments and adjusting for inflation, the net overall cost directly to patients of a day of hospital care actually *fell* between 1950 and 1974, and only rose above 1950 levels in 1975.[15] This occurred, even though the actual cost adjusted for inflation increased over four-fold. Relative to average weekly earnings in the private sector, the out-of-pocket cost of a day's care to a patient covered by private insurance rose only from 18.9 percent in 1950 to about 22 percent in 1975.[16] Overall, this presents a remarkable picture. As Professor Martin Feldstein, the leading authority on hospital costs, has observed:

> Although the cost of producing a day of hospital care has increased very rapidly during the past 25 years, the real net price to the patient at the time he goes to the hospital has hardly changed at all. Even if government spending is ignored, the expansion of private insurance has meant that the net cost of privately financed hospital care has not increased relative to average weekly income.[17]

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[11] Ibid., pp. 13–27.
[12] Ibid.
[13] Ibid., p. 31.
[14] Gibson and Fisher, op. cit.
[15] Ibid., p. 35.
[16] Ibid.
[17] Ibid., p. 30.

Government payments have indeed risen, so the total real patient-paid price of hospital care has hardly increased since 1950. Even in a fully competitive market, this trend would certainly encourage much increased demand. There is considerable evidence that consumers, in accord with medical advice, demand more costly service when increased insurance coverage lowers the net price of hospital service.[18] Also insurance fosters demand over time, as doctors and patients develop new attitudes and habits.[19] But in a competitive market with unrestricted supplies and even with increased insurance coverage, there would not likely be a continual increase in the relative cost of care. Price might increase temporarily or even for some time until capacity adjusted and entry occurred. Ultimate output "quality" or resource intensity might rise, but only to an extent warranted by consumer demand. In a competitive industry, a number of firms would respond to increased demand by increasing capacity and output and ultimately cutting prices to some degree. In such a market, it appears unlikely that in the long run the major effect of widespread insurance would be increases in cost.

A number of characteristics of the health care market and the hospital industry make other interpretations much more credible. Hospitals are typically nonprofit organizations reimbursed for their "reasonable costs." [20] As such, hospitals may pursue a variety of objectives such as enhancing the prestige of the administrator and medical staff by producing high quality care with the latest technologies, which serve economic or other interests of physicians.[21] If price competition were strong or entry were easy, natural forces would compel hospitals to be reasonably efficient.[22] But with readily available insurance, neither patients nor doctors have an interest in seeking low cost hospital care.[23] Sparse patient information on medical prices and alternatives compounds the lack of concern with cost.[24] The near absence of information itself gives doctors and hospitals monopoly power over patients. Yet, even were hospitals to price competitively, patients would have little economic motivation to shift to lower cost methods of care.

It is widely believed that a principal form of hospital competition is for physicians,[25] by providing extensive capital equipment. Physicians do not pay for use of hospital resources, and therefore have incentives to demand excessive quantities. Cost reimbursement, nonprofit status and the general absence of price competition give hospitals both incentive and leeway to provide such facilities.[26] Observed excess capacity and redundancy of expensive capital equipment are

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[18] See Martin Feldstein, "Economic Studies of Health Insurance," in M. Intriligator and D. Kendrick *Frontiers in Quantitative Economics II;* "Quality Change and the Demand for Hospital Care," Econometriac, 1977, cited in Ibid., p. 36.

[19] Ibid.

[20] See Paul J. Feldstein and John Goddeeris, "Payment for Hospital Services: Objectives and Alternatives," Health Manpower Policy Studies Group, p. 5, School of Public Health, University of Michigan, Ann Arbor, Michigan, December 1976 (processed). (Hereafter cited "Payment for Hospital Services.")

[21] Ibid., pp. 6–7.

[22] This raises questions of the failure of firms and maintaining quality of care.

[23] "The Rapid Rise of Hospital Costs," op. cit., page 36; David Salkever, "Competition Among Hospitals," paper presented at a Federal Trade Commission conference, "Competition in the Health Care Sector: Past, Present, and Future," Washington, D.C., June 1–2, 1977 (processed).

[24] Council on Wage and Price Stability, "The Complex Puzzle of Rising Health Care Costs: Can the Private Sector Fit It Together?" Washington, D.C., December 1976, hereinafter cited in The Complex Puzzle, pp. 19–20.

[25] "Payment for Hospital Services," op. cit., pp. 6–7; The Complex Puzzle, op. cit., pp. 9–10.

[26] "Payment for Hospital Services," op. cit., p. 6.

consistent with this picture of the industry. For example, in Atlanta a group of neurologists installed an expensive CAT scanner across the street from a hospital which they knew was about to install one: from that area of 1.5 million persons there are already 17 such machines, yet it appears that eight could serve a population of over 3 million.[27] In Orange County, California, hospital occupancy rates have been 54 percent, so about 40 percent of beds have been vacant.[28] As Professor Martin Feldstein has concluded, the result of all these factors is that:

> (H)ospitals respond to . . . increased demand for expensive care by raising their cost per patient day and using the extra revenue to provide a more expensive style of care. This change in the apparent quality of care further increases demand setting off another round of price and quality increases.[29]

Also cost reimbursement through public support and private insurance may give "hospital personnel too much leeway in determining the social goals of hospital care, and in determining the terms of the trade-off between these social goals and their own more personal ones." [30] This is somewhat analogous to the situation that once prevailed in airlines, where price and entry regulation led the industry to compete by increasing scheduling frequency and service quality to a point beyond what consumers would have demanded had there been price competition among firms. With airlines, the result has been imposition of excessively costly product quality, a problem that can be addressed by regulatory changes.

In hospital care, the result is similar. Price competition for hospital services is unlikely to be strong, and neither doctor nor patient directly sustains the full cost of care. However, all consumers and taxpayers do pay for expensive care through insurance premiums and taxes. When care is needed, consumer choice is affected, at best, by the out-of-pocket cost of hospital service. Because of insurance the cost appears modest, thus prompting consumption. In consequence, "our current method of financing hospital care denies patients and their physicians the opportunity to choose effectively between higher cost hospital care and lower cost hospital care." [31] This somewhat oversimplifies the case for, as discussed above, the "problem" of hospital costs results from the interaction of information problems, insurance, and cost reimbursement. Further, the special nature of health care and its inherent uncertainty mean that consumers may be less likely to pay attention to cost here than in other areas.[32] The strong demand for comprehensive health insurance coverage is consistent with this view.

Overall, the "problem" is not simply how to "contain" hospital costs, but how to assure a suitable quality of medical care at minimum cost. As knowledge and real incomes grow, the appropriate quality and, hence, cost of health care may increase. This requires balancing potential gains from additional medical care against advantages from use of other resources.

2. Federal proposals to control hospital costs

Spiraling hospital costs have prompted a number of legislative proposals, which would extend Federal regulatory controls to this

[27] Hearings—Hospital Cost Containment, op. cit., p. 139.
[28] Ibid., p. 157.
[29] The Rapid Rise of Hospital Costs, op. cit., p. 36.
[30] "Payment for Hospital Services," op. cit., p. 8.
[31] The Rapid Rise of Hospital Costs, op. cit., p. 67.
[32] Kenneth Arrow, "Uncertainty and the Welfare Economics of Medical Care." *American Economic Review*, December 1963, pp. 941–973.

field. The possible advantages or weaknesses of those specific proposals are not of immediate relevance to this discussion. As previously mentioned, ours is a threshold inquiry whether, under the framework for regulation developed in this report, any Federal controls are justified for hospital costs. Thus the various proposed measures are discussed generally and without critique as possible remedies for the problems that prompt serious public concern.

A major thrust of the legislation under consideration in the 95th Congress was control of capital expenditures. Capital spending is a major contributor to hospital costs generally: the Congressional Budget Office has indicated that, without additional controls, such expenditures are expected to total some $14 billion by 1982, which would be an increase of about $6 billion over a four year period.[33] By controlling capital investments and thus excessive growth of service and service "quality", it is hoped admissions will decline and the problem of unneeded hospitalizations will thereby be addressed. Finally, as the President has stated on various occasions, containing hospital costs is considered a major part of the Administration's overall efforts against inflation. Secretary of HEW Joseph E. Califano reiterated this commitment in July 1978 when he declared that controlling such costs "remains the No. 1 unfilled priority before the Congress in the fight against inflation.[34]

Controls on capital expenditures also are in line with the existing Federal approach to this problem. The National Health Planning and Resources Development Act of 1974 requires states to establish certificate of need programs to review the justifications for major new hospital investments. By July 1977, according to the Congressional Budget Office, 32 states had created such programs although it was not clear how many of those efforts were operating effectively.[35]

President Carter's "Hospital Cost Containment Act of 1977," which was introduced in April 1977, was the major legislative proposal in this field considered in the last Congress.[36] Very briefly, the bill would have set ceilings on total in-patient revenues for nonfederal, short-term hospitals. As introduced, the allowable growth in total revenue would be limited to 10.6 percent in the first year the act took effect, but would be reduced to under 9 percent by 1982. The Administration measure, which was viewed as a temporary effort to check costs, would have mandated the Secretary of HEW to present long-range remedies for this problem by a certain date.[37] In the 18 months the bill was before Congress a number of modifications were considered, including greater reliance on state efforts and the possibility that mandatory federal controls be imposed only after allowing a two-year voluntary effort by the hospital industry to reduce costs. In July 1978, the House Interstate and Foreign Commerce Committee voted to amend the Administration bill to remove all mandatory controls and instead simply encourage the industry to reduce hospital costs

[33] Congressional Budget Office, "The Hospital Cost Containment Act of 1977. An Analysis of the Administration's Proposal," p. xiii, printed for the use of Committee on Human Resources, U.S. Senate, 95th Cong., 1st sess. (1977).
[34] New York Times, July 19, 1978, p. A1.
[35] Loc cit., p. vix.
[36] H.R. 6596, S. 1391, 95th Cong., 1st sess. (1977).
[37] Loc cit.

voluntarily by 2 percent annually.[38] Near the end of the session, a significantly modified Administration bill did pass the Senate, but the House adjourned without taking any action. Thus containment of hospital costs failed in the 95th Congress.[39]

Another noteworthy approach to this problem considered in the last Congress was the "Medicare-Medicaid Administrative Reimbursement Reform Act," introduced in 1977 by Senator Herman Talmadge. That measure was presented as a remedy for long term structural problems of rising hospital costs. In addition to cost control, the bill would have regulated the reimbursement of hospital-associated physicians and allowed Medicare reimbursement for long term care in hospitals at average rates for such services in particular areas of the country. The bill also would have mandated use of HEW-developed relative value scales for calculations of reasonable charges. Thus the basic feature of the Talmadge bill was hospital payments on the basis of costs relative to those which other facilities in the same area charge.[40]

Of course, those are not the only viable alternatives for Federal action designed to control escalating hospital costs. Indeed, President Carter's proposed legislation expressly recognized that fact by mandating that proposals for permanent, long term health care solutions be developed and presented within a definite time-frame. Certainly one available alternative, which has been the system in Great Britain now for thirty years, would be "socialized medicine," guaranteeing free medical care to every citizen. It is not clear that a nationalized system of health care, modeled after the British system, would either be efficient and less costly than what exists at present, while providing a necessary quality of health care.[41] Moreover, in realistic terms, that approach is not now the subject of serious consideration, and therefore whether that extensive degree of Federal intervention would be appropriate, in terms of the framework presented, is not considered in this discussion.

With this background, the various criteria for regulation are now applied to the question of whether the Federal government ought to intervene in order to control hospital costs.

3. Applying the framework

Many of the justifications for Government intervention, discussed earlier in this report, are either inapplicable or irrelevant to the question of Federal controls on hospital costs. For example, while it is true that concentration is high in many areas of the hospital industry,[42] the principal problem appears to be the existing lack of incentives for cost control, socially productive competition and innovation. Natural monopoly, in the sense of one producer being necessary for minimum

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[38] New York Times, July 19, 1978, p. A1; Washington Post, July 19, 1978, p. A1; Washington Star, July 18, 1978, p. A1.

[39] For an analysis of those events, see Ward Sinclair, "The Politics of Hospital Costs," Washington Post, Nov. 12, 1978, p. A1; Nov. 13, 1978, p. A1; Nov. 14, 1978, p. A1; and Nov. 15, 1978, p. A1.

[40] S. 1470, 95th Cong., 1st sess. (1977).

[41] New York Times, July 6, 197, p. A–1+. *See also* Alan Maynard, "The Containment of Health Care Costs in the United Kingdom," in Stuart O. Schweitzer, ed., "Policies for the Containment of Health Care Costs and Expenditures" U.S. Dept. of Health, Education, and Welfare, Pub. No. (NIH) 78–184, 1976.

[42] Salkever, opt. cit., pp. 4–5.

cost, is not a justification. In hospitals, unlike electric utilities or pipelines, it is not generally the case that efficient service is best accomplished by a single producer. Moreover, hospital cost inflation—the principal problem of concern—is not a result in any significant sense of monopoly power. Some of the remaining justifications, such as regulation to conserve natural resources or to promote favored industries, are clearly not relevant to this discussion.

However, we conclude that some form of Federal intervention is justified on two separate bases. First, major externalities exist in the hospital industry, which contribute significantly to high costs: insurance, which means that neither doctors nor patients are faced with the full, direct costs of hospital care; and the fact that decisions on care are typically made by physicians, who are intermediaries with no financial incentive to cut costs. Indeed, the presence of insurance and the medical profession's desire to provide complete treatment, combine to encourage greater expense. A second major justification for a Federal role is the lack of adequate information. The absence of consumer information, coupled with third-party payment, encourages an attitude of indifference to hospital care costs. Both of those justifications will now be discussed in detail.

4. Externalities as rationales

Major externalities exist in the hospital industry, because insurance and a wide variety of government supports divert a large share of the total costs of care away from patients and physicians. In other words, the full consequences do not fall on those directly involved and, as a result, are not properly taken in account. Also decisions on health care are not made by either "consumers" or "suppliers", but instead by "intermediaries" who, in this case, are the doctors. At present there are incentives to encourage physicians to reduce the costs of care by selecting the least-expensive treatment.

Government subsidy, tax concessions and private insurance significantly contribute to escalated costs and resource misallocation in the hospital sector. Regardless of the nature and availability of information on medical/hospital "needs", patients will have little financial incentive to economize as long as insurance covers much of the costs of treatment. At present, insurance coverage is quite complete and, even excluding government payments, individuals do not pay a large proportion of their hospital costs. Physicians do not bear any of the costs of hospitalization and instead use hospital capital equipment and other facilities free of charge. Thus the costs of hospital care are largely external to those making treatment decisions. As with the use of environmental resources, absent regulation or other government action, the result is "excessive" use, far beyond the level individuals would desire had they paid the full cost of extra care.

Viewed another way insurance coverage carries with it the possibility of "moral hazard"; that is, use increases because of insurance itself. Deductibles and cost-sharing do provide some incentive, while protecting individuals from large losses, and do lower the financial externalities inherent in some insurance mechanisms. But very steep copayment provisions could deter poor people from seeking medical care. In any event, for hospital care, such copayment provisions are generally quite modest, as the small proportion of private payment

indicates. Thus nearly complete insurance coverages positively encourages many individuals to use care which is either unnecessary or worth substantially less than its cost. There is also little financial incentive to question the choice of hospital on cost grounds, to urge doctors to limit the length of stay, or to request the use of lower cost alternatives.[43]

In part hospital insurance coverage is so complete because consumers desire protection from risk. But that is by no means the sole explanation. First and probably most important, health insurance enjoys a very large tax subsidy on the order of $6 billion a year,[44] because employer contributions are deductible as business expenses and not taxable as a part of worker income. Thus a significant portion of the cost of health insurance coverage is borne, neither by workers nor employers, but by the taxpayer. And that second financial externality contributes to the rapid rise in hospital costs and potentially excessive use of resources in the health care sector.

This tax subsidy tends to induce workers to demand expanded and more complete coverage. Although some basic plans provide for copayment of some sort, it appears that the tax subsidy makes feasible the sale of "supplemental insurance" to cover the copayment. Without the subsidy the costs of such insurance would apparently be so high relative to the actuarial value that little if any would be sold.[45] As a result, more workers enjoy "first dollar" coverage of health care costs including hospitalization, which obviously removes any direct financial incentive to economize on use.

Hospital and physician influenced or controlled Blue Cross and Blue Shield plans may also contribute to this externality.[46] Covering about half of the insured population the "Blues" are non-profit firms principally governed by industry representatives, who can be benefitted by increased demand for hospital and physician services.[47] Largely due to tax advantages and discounts from hospitals the "Blues" have substantial market power vis-a-vis other insurers which they appear to exercise in part by offering a relatively restrictive selection of options.[48] Large deductibles, which would directly shift costs to users, are very rare among the "Blues." [49] For that and other reasons, both appear to provide substantially more complete insurance coverage than commercial insurers,[50] and in states with higher Blue Cross markets shares, a greater proportion of hospital expenses are paid by insurance.[51] Blue Cross and Blue Shield plans may exercise monopoly power by concentrating on selling insurance more complete than consumers would be willing to pay for in the absence of tax advantages. What results is excessive insurance, the compounding of financial externalities, less public consciousness about expense, greater demand for hospital services, and upward pressure on cost. This upward pressure on costs itself

[43] Many insurance policies cover only hospital care.
[44] The Rapid Rise of Hospital Costs, op. cit. p. 38.
[45] Emmett B. Keeler, Daniel T. Morrow and Joseph P. Newhouse, "The Demand for Supplementary Health Insurance, or Do Deductibles Matter?" Journal of Political Economy, v. 85, pp. 789–801 (1977).
[46] Ibid.
[47] See H. E. Frech, III and Paul B. Ginsburg, "Competition Among Health Insurers," paper presented at a conference sponsored by the FTC, "Competition in the Health Care Sector: Past, Present and Future," Washington, D.C. June 1–2, 1977.
[48] Ibid., p. 4.
[49] Ibid., p. 5.
[50] Ibid., pp. 10–11.
[51] Ibid., p. 4.

will increase the demand for (more complete) insurance and increase upward pressure on costs.[52]

Even with no tax subsidy to insurance, hospital care would be heavily subsidized. Excluding tax subsidies, fiscal 1975 federal subsidies to health care were $10.8 billion. Tax subsidies include those to insurance and those to nonprofit hospitals and other health care facilities. This means that in 1975 direct subsidies paid about 10 percent of total health care costs and, of course, much more for heavily subsidized groups. This itself creates a significant financial externality. The share of hospital cost paid by government subsidy was 44.5 percent in 1975, creating an even more powerful financial externality and blunting of incentives.

To some extent, subsidy to medical care is inevitable and desirable. But the present system of insurance and subsidy creates upward pressures on cost, which in turn increases the "need" for regulation to contain both costs and subsidy. This has occurred in other fields, notably subsidies for airlines and airport construction.

Therefore, the presence of very significant financial externalities in the hospital field does serve as a valid justification for government intervention. At present, a large share of hospital costs is not directly sustained by the users of those services and, more important, there is an absence of incentives to encourage consumers to take account of costs and alternatives in this area. If anything, the present system appears to encourage overuse and waste, which certainly leads to greater inflation. Government may have a necessary role in altering that situation, perhaps through the imposition of capital and other expenditure limitations and ceilings. Such action may in the short term restrict expenditures, but will probably not address the underlying causes of spiraling hospital costs.

In that regard, several other alternatives are available to direct regulation, and should be considered as a means for assuring that users take into account the costs.

First, copayment could by law be required for health insurance policies and the tax subsidy to health insurance eliminated, or reduced, particularly as it might apply to supplemental insurance. If this were not feasible, special tax or other encouragement could be given for increased use of Health Maintenance Organizations, such as Kaiser plans, in which physicians and other providers are at risk for increased costs.[53] With fixed prepayments for defined services providers are more directly affected by increases—or decreases—in health care costs. As in Kaiser plans and other HMO's, doctors will have financial incentive to avoid the use of high cost facilities. Decreased quality of care and underutilization could be a problem as HMO's sought high profits. Whether this tendency would in the long run be suitably offset by professional ethics and competition for patients is not definitively known. HMO's do appear effective in lowering health care costs to members, largely by reducing the frequency of hospital admissions.[54]

In addition the market power of the "Blues" could be reduced by eliminating certain tax and other advantages or, possibly, by requir-

[52] The Rapid Rise of Hospital Costs, op. cit., p. 38.
[53] See The Complex Puzzle, op. cit., pp. 28–30, 149–155.
[54] Harold E. Luft, "How Do HMO's Achieve Their Cost Savings?"

ing them to offer a wider range of policies of differing degrees of completeness. But, with the present tax subsidy to health insurance this may not be effective. Another alternative would be to provide incentives, by allowing consumers specific tax credits or vouchers. Consumers would then have direct incentives to economize on care. For equity reasons, large credits or vouchers could be given to lower income consumers.

It should be noted that most of those approaches involve shifting the financial burden, so that it is assumed more directly by patients. And, if that occurred, there would be some impact on doctors' decisions on health care: patients would make a greater effort to insure that only the least-costly and most necessary treatment was utilized. However, those alternatives do not provide incentives directly to physicians to reduce the cost of hospital care. We believe that further consideration of this matter is required, in order to develop ways in which doctors—who are the prime decisionmakers in this area—will take greater account of costs in prescribing treatment.

5. Imperfect consumer information as a rationale

Lack of adequate information is a major problem in health care costs. Inadequate health care, whether or not it involves hospitalization, can have severe and irreversible consequences. Also most people are ill-equipped to pre-determine medical need. As previously discussed, that inability coupled with potential consequences could justify a wide range of licensing and accreditation regulations as well as standard setting for hospital procedures, staff and equipment.

A standards-enforcement approach thus might be appropriate. But, depending on its nature, this could be seen as interfering with the personal relationship between patient and physician. Peer review committees are a potential compromise, but they may tend to serve provider not patient interests. Malpractice suits can act as an incentive, but can also lead to the practice of "defensive medicine" rather than effective treatment. Enforcing detailed standards on hospitals is also likely to discourage innovation, lead to duplication of facilities, and raise costs. Assuring quality care, which would be the primary objective of a standards approach, is not the key problem: today, doctors presumably have clear incentives to provide the best available care in most instances. Under an HMO type system concern with setting and enforcing standards may be of more legitimate concern.

As noted above, lack of consumer information coupled with third party payment encourages an attitude of indifference to health costs. Thus patients are more likely to follow without question doctors' recommendations. What can result is a situation in which physicians may be able to "create their own demand." [55] This in turn can create demand for the services of the particular hospitals at which the physician has staff privileges; and that demand may be insensitive to both price and quality. This implies a potential for significant individual hospital monopoly power and resultant cost escalation. Absent patient or physician incentives to economize, price information is unlikely to be

[55] See Robert G. Evans, "Supplier—Induced Demand: Some Empirical Evidence and Implications," in Mark Perlman, ed. *The Economics of Health and Medical Care*, New York: John Wiley and Sons, 1973.

sought or generated. At present, little or no price information is readily available to patients from either hospitals or doctors. The demand for, and thus the effect of price, information could be increased by, for example, requirements that insurance would reimburse only for the rate charged by the least expensive hospital of a similar type. Providing quality information could induce consumers to reject certain hospitals, even though recommended by physicians.

Inadequate information clearly contributes to an environment where excessive hospital cost inflation is inevitable without appropriate restraints. However, improving information through government-imposed disclosure requirements, without something more, would probably have little effect on increasing costs. That is so, because more adequate information does not address the basic problems inherent in widespread use of insurance and government subsidies. Also much of the knowledge in this area is relatively difficult to communicate on a mass basis. All the same, information in this field can certainly be improved and that alone justifies some form of government intervention to achieve that objective.

6. Conclusion

We conclude that two of the criteria developed in this report as a framework for regulation, do support some form of Federal intervention to control and contain hospital costs. Federal action is justified on the basis of very significant financial externalities: The full cost of hospital care are not directly sustained by users; and there is an absence of incentives to encourage both consumers and physicians to consider expense and alternatives. Because insurance typically initially assumes most of the cost, the expense appears modest to patients and thus consumption is prompted. The result is spiralling costs for hospital care. Inadequate, sparse or not readily understandable information on costs and options also contribute to the problem, and suggest a second justification for Federal intervention. At present, little or no price information is readily available to patients from either doctors or hospitals. While that situation clearly contributes to excessive hospital costs, merely providing information without addressing the problems of third-party payments will not be a solution. Containment of hospital care costs, insuring a suitable quality of medical care at minimum cost, would be a more meaningful form of Federal intervention.

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